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Ukiah Field Office

Draft Resource Management Plan and Draft Environmental Impact Statement

Volume II

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4.0 ENVIRONMENTAL CONSEQUENCES

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter addresses the likely consequences, both beneficial and adverse, to the natural and human environments in the Ukiah Field Office that could result from implementing the alternatives described in Chapter 2. These include short-term and long-term effects, direct and indirect effects, and cumulative effects. Duration, intensity (or magnitude), and context (local, regional, or national effects) of impacts are interpreted where possible. Mitigation measures designed to avoid or reduce impacts were incorporated into the management alternatives, so impacts in this chapter are considered unavoidable and would result from implementing the management actions and mitigation. If impacts are not discussed, analysis has indicated either that none would occur or that their magnitude would be negligible. Only negligible, if any, impacts have been identified for geology, prime and unique farmlands, hazardous materials, lands and realty, interpretation and education, public safety, and waste management. Therefore, these resources are not discussed as stand-alone resource topics. No specific projects are proposed that would have negative impacts on floodplains or wetlands. Individual watershed restoration activities and other projects that affect wetlands/floodplains would undergo a site-specific permitting/NEPA analysis. Because all on-the-ground actions will be subject to a Visual Resources contrast assessment to ensure that they meet the objectives of the Visual Resources Class where they are located, there are no impacts identified at this time for visual resources except from the VRM program. It has been determined that the plan will not have a direct or adverse effect on Wild and Scenic River values, and is therefore in compliance with Section 7 of the Wild and Scenic Rivers Act (Public Law 90-542 and amendments thereto). Thus, Wild and Scenic Rivers values will be discussed only in relation to the rivers/streams studied for eligibility and suitability in the plan. This plan will undergo a specific review by the California Coastal Commission to determine consistency with the California Coastal Act.

4.1.1 Methodology

Impact analyses and conclusions are based on interdisciplinary team knowledge of resources and the project area, reviews of existing literature, and information provided by experts in the BLM and other agencies. The analyses identify both enhancing and improving effects to a resource from a management action, and actions with potential to degrade a resource. Any impacts described in this section are based on the conceptual plan of the alternatives under consideration as described in Chapter 3, and the baseline used for projecting impacts is the current condition or situation described in Chapter 2. The management alternatives have been configured to maximize benefits and minimize adverse effects on both ecosystem function and the human environment. Effects are quantified where possible. In the absence of quantitative data, best professional judgment prevailed; impacts are sometimes described using ranges of potential effects or in qualitative terms, where appropriate.

4.1.2 Impact Terminology

Terms referring to impact intensity, context, and duration are used in the effects analysis. Unless otherwise stated, the standard definitions for these terms are as follows:

- **Negligible:** the impact is at the lower level of detection; there would be no measurable change.
- **Minor:** the impact is slight but detectable; there would be a small change.

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- **Moderate:** the impact is readily apparent; there would be a measurable change that could result in a small but permanent change.
- **Major:** the impact is large; there would be a highly noticeable, long-term, or permanent measurable change.
- **Localized impact:** the impact would occur in a specific site or area. When comparing changes to existing conditions, the impacts would be detectable only in the localized area.
- **Short-term effect:** the effect would occur only during or immediately after implementation of the alternative.
- **Long-term effect:** the effect could occur for an extended period after implementation of the alternative. The effect could last several years or more.

4.1.3 Cumulative Impacts

NEPA requires evaluation of a proposed action's potential to contribute to "cumulative" environmental impacts. A cumulative impact is defined as:

> The impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impacts can result from similar projects or actions, as well as from projects or actions that have similar impacts (40 CFR 1508.7).

In this case, similar actions external to the Ukiah Field Office could include recreation developments in surrounding State Parks, watershed restoration projects conducted by non-profit groups in other parts of the planning area, or county plans that allow population growth that would increase traffic levels and visitation.

The objective of cumulative impact analysis is to evaluate the significance of the proposed action's contribution to cumulative environmental impacts. It is accomplished in three steps:

- Step 1: Identify the cumulative impacts study area for each resource evaluated. Unless otherwise indicated, the cumulative impacts study area covers the Ukiah Field Office planning area.
- Step 2: Identify and describe past, present, and reasonably foreseeable future actions in the cumulative impact study area that are similar to the proposed action or have substantial impacts to which the proposed action would contribute.
- Step 3: Evaluate the potential for the proposed action to have a substantial contribution to cumulative environmental impacts with the potential to significantly affect the environment.

The timeframe for the cumulative impact analysis begins at the anticipated time that this RMP will first take effect, in 2006, and extends for the twenty-year life of the plan to 2026. It includes existing conditions of the landscape, particularly alterations from past developments and uses of the land.

4.1.4 Chapter Organization

Because the BLM is not considering the alternatives as stand-alone scenarios, effects from different management actions under all alternatives are considered by the following resource topics:

- Visual Resources Management
- Wildlife and Fish
- Vegetation Management
- Riparian and Wetland Habitats
- Social and Economic Conditions
- Cultural Resources
- Special Designations
- Forest Management
- Livestock Grazing Management
- Fire Management
- Minerals
- Wind Energy
- Travel Management and Route Designation
- Recreation Resources
- Soil Resources
- Air Quality

For each resource, the possible effects from other resource management programs are described and analyzed. Within each section of the resource analysis, effects common to all alternatives are discussed first. Then effects from individual alternatives are described comparatively, to clarify differences between the alternative approaches, and cumulative impacts are considered; where no cumulative impacts are stated, they are considered to be negligible or nonexistent.

4.2 IMPACTS ON VISUAL RESOURCES

Because all on-the-ground actions will be subject to a Visual Resources contrast assessment to ensure that they meet the objectives of the Visual Resources Class where they are located, there are no impacts identified at this time for visual resources except from the VRM program.

4.2.1 Impacts on Visual Resources from Visual Resources Management

Implementing Alternative A would result in the overall condition of visual resources in the planning area being similar to existing conditions, as described in Section 3.3, with the exception of potential construction of wind turbines or other utilities in areas that have not been formally classified for VRM (see Appendix J for Wind Energy RFD). Alternatives B, C, and D all assign VRM Management Classes

to each management area, in coordination with the BLM's Recreation Opportunity Spectrum (ROS) zoning.

4.2.1.1 Common to All Management Areas

Under Alternative A, existing acreages in each VRM Class would remain at existing conditions: VRM Class I, 0 acres; VRM II, 35,342 acres; VRM III, 220,994 acres; VRM Class IV, 9,349. Continuing to manage public lands according to existing VRM Class objectives would result in minor to moderate impacts to scenic resources, as a result of the impacts of activities of other programs. These impacts would generally maintain or improve visual resources as a result of being mitigated to the extent practical.

Individual management measures (Alternatives B, C, and D) could improve or detract from visual resources quality, as described under each management area below.

4.2.1.2 Cow Mountain

Currently, VRM has not been completed for the Cow Mountain management area. However, lands have been assigned a VRM *Inventory* Class III. Under Alternative A, Cow Mountain would remain at existing conditions, resulting in no impacts to visual resources. Alternatives B and C (Preferred Alternatives) would prescribe VRM Classes I, II, III, and IV throughout the management area, in coordination with ROS zoning. There would be no impact to Frontcountry Zones (VRM Class III). Potential positive impacts would occur to the Middlecountry and Backcountry Zones, as they would be managed as VRM Classes II and I, respectively. Increasing the VRM Class for these zones will better protect the visual resources within Cow Mountain during the life of this plan. There would be potential negligible to minor negative impacts to visual resources in the Rural Zone, as it would be managed as VRM Class IV. These potential negative impacts would be negligible to minor since the Rural Zone is already classified under ROS prescriptions, which is constituent with the visual landscape typically found in VRM Class IV managed lands.

Under Alternative D, only the Middlecountry and Backcountry Zones would be managed at a VRM Class III or higher. This would result in no impact on visual resources in the Middlecountry Zones (VRM Class III), and a potential positive impact to visual resources in Backcountry Zones (VRM Class II). Potential minor to moderate negative impacts would occur to visual resources in the Frontcountry Zone, as it would be managed as VRM Class IV. These potential negative impacts would be minor to moderate because the visual landscape found in the Frontcountry Zone is not necessarily consistent with that found in lands managed as VRM Class IV. Potential negligible to minor negative impacts would occur to visual resources in the Rural Zone, as it would be managed as VRM Class IV as well. These potential negative impacts would be negligible to minor because the Rural Zone is already classified under ROS prescriptions, which is constituent with the visual landscape found in VRM Class IV managed lands.

4.2.1.3 Knoxville

Currently, VRM has not been completed for the Knoxville management area, but lands have been assigned a VRM *Inventory* Class III. Under Alternative A, Knoxville would remain at existing conditions, resulting in no impacts to visual resources. Alternatives B and C (Preferred Alternatives) would prescribe VRM Classes II and III throughout the management area, in coordination with ROS zoning. Since current management in Knoxville is VRM *Inventory* Class III, there would be no impact to Frontcountry

Zones (VRM Class III), but a potential positive impact to the Middlecountry Zone, as it would be managed as VRM Classes II. Increasing the VRM Class for the Middlecountry Zone will better protect the visual resources within Knoxville during the life of this plan. Under Alternative D, only the Middlecountry Zone would be managed at a VRM Class III. This would result in no impact on visual resources in this ROS zone.

4.2.1.4 Indian Valley

VRM has been completed for the Indian Valley management area. Lands within Indian Valley have been assigned VRM Classes II and III, depending where they are located within the management area. BLM lands that can be viewed from the reservoir are currently managed as VRM Class II, while those lands not visible form the reservoir are managed as VRM Class III. Under Alternative A, Indian Valley would remain at existing conditions, resulting in no impacts to visual resources.

Alternative B would prescribe VRM Classes II and III throughout the management area, in coordination with ROS zoning. Since current management in Indian Valley is VRM Classes II and III, there would be no impact to visual resources in Frontcountry Zones (VRM Class III). However, a potential positive impact would occur to the Middlecountry Zone, as it would be managed as VRM Classes II. Increasing the VRM Class for the Middlecountry Zone will better protect the visual resources within Indian Valley during the life of this plan. Alternative C (Preferred Alternative) would also result in a potential positive impact to the Middlecountry Zone, as it would be managed as VRM Classes II. However, potential minor to moderate negative impacts would occur to visual resources in the Frontcountry Zone, as it would be managed as VRM Class IV. These potential negative impacts would be minor to moderate because the visual landscape found in the Frontcountry Zone is not necessarily consistent with that found in lands managed as VRM Class IV.

Under Alternative D, the Middlecountry Zone would be managed at a VRM Class III. This would result in potential minor to moderate negative impacts to visual resources within this zone, as the visual landscape found through the Middlecountry Zone is not consistent with that found in VRM Class III managed lands. Potential minor to moderate negative impacts to visual resources in the Frontcountry Zone, as it would be managed as VRM Class IV. These potential negative impacts would be minor to moderate because the visual landscape found in the Frontcountry Zone is not necessarily consistent with that found in lands managed as VRM Class IV. Potential negligible to minor negative impacts would occur to visual resources in the Rural Zone, as it would be managed as VRM Class IV as well. These potential negative impacts would be negligible to minor because the Rural Zone is already classified under ROS prescriptions, which is constituent with the visual landscape found in VRM Class IV managed lands.

4.2.1.5 Cache Creek

VRM has been completed for the Cache Creek management area. Lands within Cache Creek have been assigned VRM Classes II and III, depending where they are located within the management area. BLM lands near the highways are currently managed as VRM Class III, while remaining lands are managed as VRM Class III. The Cache Creek WSA, however, is managed as VRM Class I. Under Alternative A, the Cache Creek management area would remain at existing conditions, resulting in no impacts to visual resources.

Alternative B would prescribe VRM Classes I, II, and IV throughout the management area, in coordination with ROS zoning. Since current management in Cache Creek is VRM Classes I, II, and III, there would be no impact to visual resources in Middlecountry and Frontcountry Zones (VRM Class III), but a potential positive impact to the Primitive and Backcountry Zones, as they would be managed as VRM Class I. Increasing the VRM Class will better protect the visual resources within these zones in Cache Creek during the life of this plan. Potential negligible to minor negative impacts would occur to visual resources in the Rural Zone, as it would be managed as VRM Class IV. These potential negative impacts would be negligible to minor because the Rural Zone is already classified under ROS prescriptions, which is constituent with the visual landscape found in VRM Class IV managed lands. There would be no impact to the visual resources found in the Urban Zone, as VRM Class IV standards are already consistent with this ROS prescription.

Alternative C (Preferred Alternative) would prescribe VRM Classes II, III, and IV throughout the management area. As with Alternative B, there would be potential negligible to minor negative impacts to visual resources in the Rural Zone and no impact to visual resources in the Urban Zone (VRM Classes IV). There would be potential negligible to minor negative impacts to visual resources found in the Backcountry and Frontcountry Zones (VRM Classes II and III, respectively), and potential minor to moderate negative impacts to visual resources found in the Middlecountry Zone (VRM Class III). There would be potential moderate to major negative impacts to visual resources in the Frontcountry Zone north of Highway 20 (VRM Class IV). These potential negative impacts would occur because the visual landscape found in these particular zones is not necessarily consistent with that found in lands managed as VRM Classes II, III, and IV.

Alternative D is the same as Alternative C, with the exception of how the Frontcountry Zone will be managed. Under Alternative D, the entire Frontcountry Zone would be managed as VRM Class IV, resulting in potential moderate to major negative impacts to visual resources. The visual resources typically found in Frontcounty Zones are not consistent with those found in lands managed as VRM Class IV.

4.2.1.6 Cedar Roughs

Currently, VRM has not been completed for the entire Cedar Roughs management area, but lands have been inventoried as VRM *Inventory* Classes II, III, and IV. The Cedars Roughs WSA, however, is managed as VRM Class I. Under Alternative A, Cedar Roughs would remain at existing conditions, resulting in no impacts to visual resources.

Alternatives B and C (Preferred Alternatives) would prescribe VRM Classes I and III throughout the management area, in coordination with ROS zoning. Since current management in Cow Mountain is VRM *Inventory* Classes II, III, and IV, with the WSA managed as VRM Class I, there would be no impact to Primative Zones (VRM Class I). There would be no impacts to visual resources in the Frontcountry Zone, as it would be managed as VRM Class III.

Under Alternative D, the Primitive and Frontcountry Zones would be managed at a VRM Classes I and IV, respectively. This would result in no impact on visual resources in the Primitive Zone (VRM Class I), and a potential minor to moderate negative impact to visual resources in Frontcountry Zones (VRM Class IV). These potential negative impacts would be minor to moderate because the visual landscape

found in the Frontcountry Zone is not necessarily consistent with that found in lands managed as VRM Class IV.

4.2.1.7 Berryessa

VRM has been completed for the Berryessa management area. Lands within Indian Valley have been assigned VRM *Inventory* Classes II and III, depending where they are located within the management area. BLM lands visible from Lake Berryessa are assigned VRM *Inventory* Class II, while the remaining lands are assigned VRM *Inventory* Class III. Rocky Ridge is currently designated as VRM Class III. Under Alternative A, the Berryessa management area would remain at existing conditions, resulting in no impacts to visual resources.

Alternative B would prescribe VRM Class III throughout the management area, in coordination with ROS zoning. Since current management in Berryessa is VRM *Inventory* Classes II and III, there would be no impact to visual resources in Frontcountry Zones (VRM Class III).

Alternatives C and D (Preferred Alternatives) would result in no impact for the Frontcounty Zone if no wind energy is developed. If wind energy is developed within the Berryessa management area, the Frontcountry Zone will be managed as VRM Class IV. This would result in a potential moderate to major negative impact to visual resources because the visual landscape found in the Frontcountry Zone is not necessarily consistent with that found in lands managed as VRM Class IV (see Appendix J).

4.2.1.8 Stornetta

Currently, VRM has not been completed for the Stornetta management area, but lands have been inventoried as VRM *Inventory* Classes II and III. Under Alternative A, Stornetta would remain at existing conditions, resulting in no impacts to visual resources. Alternatives B and C (Preferred Alternatives) would prescribe VRM Classes II and III throughout the management area, in coordination with ROS zoning. Since current management in Stornetta is VRM *Inventory* Classes II and III, there would be no impact to visual resources in the Middlecountry and Frontcountry Zones.

Under Alternative D, the Middlecountry and Frontcountry Zones would be managed at VRM Classes III and IV. This would result in a potential moderate to major negative impact to visual resources because the visual landscape found in the Middlecountry and Frontcountry Zones at Stornetta is not necessarily consistent with that found in lands managed as VRM Classes II and IV.

4.2.1.9 Geysers

VRM has been completed for the Geysers management area. Areas near the Geysers have been assigned VRM Classes III and IV. Under Alternative A, the Geysers would remain at existing conditions, resulting in no impacts to visual resources. Alternative B would prescribe VRM Classes II and IV throughout the management area, in coordination with ROS zoning. Since current management in the Geysers is VRM Classes III and IV, there would be no impact to Rural Zones (VRM Class IV), but a potential positive impact to the Middlecountry Zone, as it would be managed as VRM Classes II. Increasing the VRM Class for this zone will better protect the visual resources within the Geysers during the life of this plan.

Alternative C (Preferred Alternative) would prescribe VRM Classes III and IV throughout the management area. There would be no impact to Rural Zones (VRM Class IV), but a potential negligible to minor negative impact to the Middlecountry Zone, as it would be managed as VRM Classes III. These potential negative impacts would be small because the visual landscape found in the Middlecountry Zone is not necessarily consistent with that found in lands managed as VRM Class III.

Alternative D would prescribe VRM Class IV throughout the management area. There would be no impact to Rural Zones (VRM Class IV), but a potential minor to moderate negative impact to the Middlecountry Zone, as it would be managed as VRM Classes IV. These potential negative impacts would be minor to moderate because the visual landscape found in the Middlecountry Zone is not consistent with that found in lands managed as VRM Class IV.

4.2.1.10 Scattered Tracts

Currently, VRM has not been completed for the Scattered Tracts management areas, but lands have been inventoried as VRM *Inventory* Class III, with the exception of VRM Inventory Class II near the East Park Reservoir. Under Alternative A, the Scattered Tracts would remain at existing conditions, resulting in no impacts to visual resources. Alternative B would prescribe VRM Class II throughout the management area, in coordination with ROS zoning. Since current management in the Scattered Tracts is VRM *Inventory* Classes II and III, there would be a potential positive impact. Increasing the VRM Class for these management areas will better protect the visual resources within the Scattered Tracts during the life of this plan.

Alternative C (Preferred Alternative) would prescribe VRM Class II to The Cedars, lands adjacent to Montgomery Woods State Park, and the Black Forest. This would be a potential positive impact in these areas since a higher VRM Class will better protect the visual resources. All other Scattered Tracts would be managed as VRM Class III, which would have no impact on visual resources, as the management area has already been assigned VRM *Inventory* Class III.

Alternative D is the same as Alternative C, with the exception of how the Black Forest will be managed. Under Alternative D, the Black Forest would be managed as VRM Class II, resulting in no impact to visual resources.

4.2.2 Potential Cummulative Impacts to Visual Resources

Under Alternative A, there could be considerable cumulative impacts to visual resources throughout the Ukiah Field Office. Potential wind energy operations, for example, could be authorized in the future and has the greatest potential for measurable impact (see Appendix J). As a whole, implementing Alternative B would play a significant role in maintaining the quality of visual resources in the management areas; this alternative would take a more active approach to managing the visual resources. Existing visual resources would be maintained under Alternative C as well, but would also potentially experience a higher level of cumulative impacts. This is especially true for those management areas that have specific locations designated for potential wind energy development. The Frontcountry Zone north of Highway 20 in the Cache Creek management area, for example, will be managed at a lower VRM Class (IV versus III) than the rest of the Frontcountry Zone in Cache Creek. In this case, Alternative C both maintains and protects the visual character of the Frontcountry Zone in Cache Creek, but also allows for it to be altered

in the case of potential wind energy development. Management actions taken under Alternative D would result in the greatest potential for cumulative impacts.

4.3 IMPACTS ON WILDLIFE AND FISH

Under the proposed RMP, existing policies would remain in place to maintain and enhance natural wildlife populations, minimize or eliminate the need for listing of additional species under the ESA, and contribute to the recovery of listed species. Wildlife and fisheries programs throughout the Ukiah Field Office lands will provide the framework to manage habitat and forage to maintain or enhance populations of native species and to support the goals and management strategies in current cooperative management plans.

These policies would cause a negligible or minor negative and a minor to moderate positive impact on wildlife species.

4.3.1 Impacts on Wildlife and Fish from Visual Resources Management

Under the proposed RMP, the BLM will protect and enhance the scenic quality and visual integrity of the characteristic landscapes managed by Ukiah Field Office.

4.3.1.1 Common to All Management Areas

The consequences of VRM would have a negligible long-term impact on wildlife populations.

4.3.2 Impacts on Wildlife and Fish from Wildlife and Fish

Under the proposed RMP, BLM will implement measures to promote the recovery and conservation of all threatened and endangered species on lands managed by the Ukiah Field Office. Wildlife and fisheries program guidance throughout the Ukiah Field Office lands will provide the framework to manage habitat and forage to maintain or enhance populations of native species and to support the goals and management strategies in current CDFG cooperative management plans. These actions will have a minor to moderate beneficial long-term impact on wildlife species.

4.3.2.1 Common to All Management Areas

Management of T&E species is conducted under regulation of the ESA and would be common to all management areas. These actions would have a moderate to major long-term positive impact to wildlife resources. Under Alternatives A and B, other wildlife species would be managed by maintaining current levels of habitat development. This would have a minor to moderate positive long-term impact on wildlife resources. Alternatives C and D would recommend a more aggressive plan for avoiding habitat degradation during project work and a wildlife monitoring plan that could be used in an adaptive management scheme. These alternatives would have a moderate to major positive long-term impact to wildlife resources.

4.3.2.2 Cow Mountain

Alternative A would continue management as outlined in the *Cow Mountain MFP.*

Fire Management and Other Habitat Alterations: A prescribed burn plan (see Fire Management, Section 2.12) would take place in selected chaparral habitats. Alternative B calls for a greater prescribed burning effort, prioritizing units that focus strictly on habitat improvement goals and not fuels reduction. Prescribed Burning under Alternative C (Preferred Alternative) would be greater than Alternative B and focus on those burns that improve habitat conditions, as well as reduce fuels hazards. Prescribed burning under Alternative D would be expanded further to include those burns that improve habitat conditions, reduce fuels hazards, and increase local water yield (see Fire Management, Section 2.12). This plan and other wildlife habitat development activities that favor habitat for deer would result in a minor short-term positive impact on deer and other forage species but would have a minor to moderate (because some of these species are limited in distribution and population relative to deer) short-term negative impact on species adapted to climax chaparral, such as the wrentit, California thrasher, California towhee and Bell's Sage Sparrow..

Priority Habitats: Alternative B would protect priority habitats, such as riparian and native oak, from negative impacts due to other activities, Alternatives C and D would actively increase the amount of priority vegetative species in these habitats. These alternatives would have a minor to moderate positive impact on wildlife resources that depend on these priority habitats.

Monitoring: Wildlife monitoring described under Alternative B could have a moderate positive impact on wildlife resources by detecting population changes and alerting managers to potential impacts from management activities.

Introductions and Augmentations: Under Alternative B, species already present could have their populations augmented by introductions, under Alternatives C and D, these introductions could also include native species historically occurring on Cow Mountain and selected approved bio-control agents. The relocation of Wild Turkeys from problem populations would be considered under Alternatives C and D. These actions could have a minor to moderate positive impact on wild turkey populations and other native species (depending on the species being introduced or augmented). An unknown minor to moderate negative impact could result from competition with native species for resources from relocated wild turkeys, but current research has not documented these impacts (ODFW 2004). A further positive impact on selected species could result from bio-control of invasives, depending on the invasive species, its effect on native species and the success of the bio-control efforts.wildlife resources.

4.3.2.3 Knoxville

Alternative A would continue the current level of habitat protection and development as outlined in the *Clear Lake MFP.*

Fire Management and Other Habitat Alterations: A prescribed burn plan (see Fire Management, Section 2.12) would take place in selected chaparral habitats only under Alternatives C (Preferred Alternative) and D and would focus on those burns that improve habitat conditions, as well as reduce fuels hazards. This plan and other wildlife habitat development activities that favor habitat for deer would result in a minor short-term positive impact on deer and selected other forage species, but would have a minor to moderate (because some of these species are limited in distribution and population relative to deer) short-term negative impact on species adapted to climax chaparral, such as wrentit, California thrasher, and California towhee.

Priority Habitats: Alternative B would protect priority habitats, such as riparian and native oak, from negative impacts due to other activities, Alternatives C and D would actively increase the amount of priority vegetative species in these habitats. These alternatives would have a minor to moderate positive impact on wildlife resources that use these habitats.

Monitoring: Wildlife monitoring described under Alternative B could have a moderate positive impact on wildlife resources by detecting population changes and alerting managers to potential impacts from management activities.

Introductions and Augmentations: Under Alternative B, species already present could have their populations augmented by introductions, under Alternatives C and D, these introductions could also include native species historically occurring in the Knoxville Recreation Area and selected approved bio-control agents. These actions could have a minor to moderate positive impact on native species whose populations are augmented. A further positive impact on selected species could result from bio-control of invasives, depending on the invasive species, its effect on native species and the success of the bio-control efforts.

4.3.2.4 Indian Valley

Alternative A would continue the current level of habitat protection and development as outlined in the *Clear Lake MFP.*

Fire Management and Other Habitat Alterations: A prescribed burn plan (see Fire Management, Section 2.12) would take place in selected chaparral habitats only under Alternatives C (Preferred Alternative) and D and would focus on those burns that improve habitat conditions, as well as reduce fuels hazards. This plan and other wildlife habitat development activities that favor habitat for deer would result in a minor short-term positive impact on deer and selected other forage species, but would have a minor to moderate (because some of these species are limited in distribution and population relative to deer) short-term negative impact on species adapted to climax chaparral such as wrentit, California thrasher, and California towhee.

Priority Habitats: Alternative B would protect priority habitats, such as riparian and native oak, from negative impacts due to other activities, Alternatives C and D would actively increase the amount of priority vegetative species in these habitats. These alternatives would have a minor to moderate positive impact on wildlife resources that use these habitats.

Monitoring: Wildlife monitoring described under Alternative B could have a moderate positive impact on wildlife resources by detecting population changes and alerting managers to potential impacts from management activities.

Introductions and Augmentations: Under Alternative B, species already present could have their populations augmented by introductions, under Alternatives C and D, these introductions could also include native species historically occurring on Cow Mountain and selected approved bio-control agents. These actions could have a minor to moderate positive impact on native species whose populations are augmented. A further positive impact on selected species could result from bio-control of invasives, depending on the invasive species, its effect on native species and the success of the bio-control efforts.

4.3.2.5 Cache Creek

All of the alternatives would continue to manage wildlife and fish species, and their habitats within Cache Creek according to the management prescriptions included within the *Cache Creek CRMP* (2004).

Fire Management and Other Habitat Alterations: A prescribed burn plan (see Fire Management, Section 2.12) would take place in selected chaparral habitats in both Alternatives A and B (Preferred Alternative). Prescribed Burning under Alternatives C and D would be greater than Alternative B (see Fire Management, Section 2.12). This plan and other wildlife habitat development activities that favor habitat for deer would result in a minor short-term positive impact on deer and selected other species, but would have a minor to moderate (because some of these species are limited in distribution and population relative to deer) short-term negative impact on species adapted to climax chaparral, such as wrentit, California thrasher, and California towhee.

Priority Habitats: All Alternatives would protect priority habitats, such as riparian and native oak, from negative impacts due to other activities These alternatives would have a minor to moderate positive impact on wildlife resources, such as Sharp-shinned Hawk, Cooper's Hawk, Pacific Slope Flycatcher, Yellow Warbler and Yellow-breasted Chat.

Monitoring: All Alternatives would design a wildlife monitoring plan that could have a moderate positive impact on wildlife resources by detecting population changes and alerting managers to potential impacts from management activities.

Introductions and Augmentations: Under all Alternatives, tule elk from populations would be augmented and the relocation of Wild Turkeys from problem populations would be encouraged. These actions could have a minor to moderate positive impact on tule elk and wild turkey populations. An unknown minor to moderate negative impact could result from competition with native species for resources from relocated wild turkeys, but current research has not documented these impacts (ODFW, 2004).

4.3.2.6 Cedar Roughs

Alternative A would continue the current level of habitat protection and development as outlined in the *Clear Lake MFP.*

Fire Management and Other Habitat Alterations: A minimal prescribed burn plan (see Fire Management, Section 2.12) would take place in selected chaparral habitats only under Alternatives C (Preferred Alternative) and D and would focus on those burns that improve habitat conditions. This plan and other wildlife habitat development activities that favor habitat for deer would result in a minor short-term positive impact on deer and other forage species, but would have a minor to moderate (because some of these species are limited in distribution and population relative to deer) short-term negative impact on species adapted to climax chaparral such as wrentit, California thrasher, and California towhee.

Priority Habitats: All alternatives would protect priority habitats, such as riparian and the stand of sergeant cypress from negative impacts due to other activities, Alternative D would actively increase the amount of priority vegetative species in the riparian habitat. These alternatives would have a minor to moderate positive impact on those species that use these habitats, such as sharp-shinned hawk, Cooper's hawk, pacific slope flycatcher, yellow warbler and yellow-breasted chat.

Introductions and Augmentations: Only under Alternative D would species already present have their populations augmented by introductions. These actions could have a minor to moderate positive impact on native species whose populations are augmented.

4.3.2.7 Berryessa

Alternative A would continue the current level of habitat protection and development as outlined in the *Clear Lake MFP.*

Fire Management and Other Habitat Alterations: A minimal prescribed burn plan (see Fire Management, Section 2.12) would take place in selected chaparral habitats only under Alternatives C (Preferred Alternative) and D and would focus on those burns that improve habitat conditions. This plan and other wildlife habitat development activities that favor habitat for deer would result in a minor short-term positive impact on deer and other forage species, but would have a minor to moderate (because some of these species are limited in distribution and population relative to deer) short-term negative impact on species adapted to climax chaparral such as wrentit, California thrasher, and California towhee.

Priority Habitats: All alternatives would protect priority habitats, such as riparian and the stand of sergeant cypress from negative impacts due to other activities, Alternative D would actively increase the amount of priority vegetative species in the riparian habitat. These alternatives would have a minor to moderate positive impact on those species that use these habitats, such as Sharp-shinned Hawk, Cooper's Hawk, Pacific Slope Flycatcher, Yellow Warbler and Yellow-breasted Chat.

Introductions and Augmentations: Only under Alternative D would species already present have their populations augmented by introductions. These actions could have a minor to moderate positive impact on native species whose populations are augmented.

4.3.2.8 Stornetta

Wildlife species and their habitats within Stornetta would be managed according to the management prescriptions included within the *Stornetta Ranch IMP* (2004).

ESA Listed Species: Management for ESA listed species, especially Behren's silverspot butterfly and Point Arena mountain beaver, is an integral part of the Stornetta Ranch under all alternatives. These management activities will have a minor to major positive impact on selected wildlife species. Alternative A would provide fencing to protect Hathaway Creek from cattle. Alternative B would include removing 40 acres, Alternative C (Preferred Alternative) would remove 160 acres, and Alternative D would remove over 240 acres of invasive introduced Beach Grass; these alternatives would have a to moderate positive impact to the snowy plover population.

Under Alternative B, recreational activities and livestock grazing would not be restricted for species management except where individual small habitats can be protected if conflicts are determined. Depending on the ability of managers to identify conflicts, this could have a minor to moderate negative impact on wildlife resources (see Recreation, Section 2.16). Under Alternatives C and D, livestock grazing would be used as a tool for managing and restoring native habitats, including the violet on which

the silverspot butterfly depends. These activities would have a minor to major positive impact on wildlife resources depending on how well they were monitored and their success.

4.3.2.9 Geysers

Alternative A would continue the current level of habitat protection and development as outlined in the *Clear Lake MFP.*

Fire Management and other habitat alterations: A minimal prescribed burn plan (see Fire Management, Section 2.12) would take place in selected chamise habitats only under Alternatives C (Preferred Alternative) and D and would focus on those burns that improve habitat conditions. This plan and other wildlife habitat development activities that favor habitat for deer would result in a minor short-term positive impact on deer and other forage species, but would have a minor to moderate (because some of these species are limited in distribution and population relative to deer) short-term negative impact on species adapted to climax chaparral such as wrentit, California thrasher, and California towhee.

Priority Habitats: Under all alternatives habitat management would primarily be passive and would focus on maintaining the current level of wildlife and fish populations by preventing adverse impacts from geothermal development. .This would have a minor positive impact to wildlife resources.

4.3.2.10 Scattered Tracts

Alternative A would continue the current level of habitat protection and development as outlined in the *Clear Lake MFP.*

Fire Management and Other Habitat Alterations: A minimal prescribed burn plan (see Fire Management, Section 2.12) would take place in selected habitats only under Alternatives C (Preferred Alternative) and D and would focus on those burns that improve habitat conditions. This plan and other wildlife habitat development activities that favor habitat for deer would result in a minor short-term positive impact on deer and other forage species, but would have a minor to moderate (because some of these species are limited in distribution and population relative to deer) short-term negative impact on species adapted to climax chaparral such as wrentit, California thrasher, and California towhee.

Priority Habitats: Under all alternatives habitat management would primarily be passive and would focus on maintaining the current level of wildlife and fish populations by preventing adverse impacts from unauthorized uses. This would have a minor positive impact to wildlife resources.

4.3.3 Impacts on Wildlife and Fish from Vegetation Management

Under the proposed RMP, management alternatives include different levels of prescribed burning and various methods for eradicating or reducing exotic or noxious weeds. Vegetation management could also include changing a vegetative community to a lower seral stage that provides more benefits (i.e., forage, cover) for wildlife populations. Alternative C is the Preferred Alternative for all vegetation management decisions.

4.3.3.1 Common to All Management Areas

Prescribed burning: The impacts of the proposed prescribed burning program are treated above under Impacts on Wildlife and Fish from Wildlife Management.

Seral Stage Management: Activities that include changing a vegetative community to a lower seral stage would result in a minor short-term positive impact on deer and selected other species, but would have a minor to moderate short-term negative impact on species adapted to later seral stages.

Exotic species: Efforts to remove exotic and noxious vegetation might have a local, short-term negative impact on wildlife populations, but would have moderate long-term positive impact on wildlife resources. The extent and nature of this impact would be dependent on the type of vegetation being removed and the geographic extent of the project.

4.3.4 Impacts on Wildlife and Fish from Riparian and Wetland Habitats

Under all alternatives, activities under the proposed RMP would continue to let natural processes take place and respond to disturbances that could negatively impact riparian and wetland areas, as they occur within budgetary and personnel constraints. Alternative C is the Preferred Alternative for all riparian and wetland habitat management decisions.

4.3.4.1 Common to All Management Areas

Riparian and wetland resources are of high value to wildlife. To the extent that BLM would be able to detect disturbances that could negatively impact these habitats, reducing these disturbances would have a moderate to major long-term positive impact on wildlife resources. Alternatives C and D increase the opportunity to detect and respond to disturbance and events that reduce riparian and wetland habitat values and so would increase the positive impacts to wildlife resources.

4.3.5 Impacts on Wildlife and Fish from Lands and Realty

4.3.5.1 Common to All Management Areas

Policies to obtain lands and interests determined to be desirable for consolidation so as to facilitate resource management under the proposed RMP could have a minor to moderate, long-term, and beneficial impact on wildlife by increasing the land base and providing greater protection to important habitats. Alternative C is the Preferred Alternative for lands and realty decisions, with the exception of the Scattered Tracts. Alternative B is the Preferred Alternative for the Scattered Tracts management areas.

4.3.6 Impacts on Wildlife and Fish from Special Designations

4.3.6.1 Common to All Management Areas

Management of these specially designated areas would have a moderate to major long-term beneficial impact on wildlife resources. Under Alternative A, no additional areas would be designated ACEC.

Under Alternative A, protective management would continue to be applied to all segments of rivers identified as eligible until a suitability determination is made. Protective management of various rivers under the proposed RMP would have minor beneficial impacts on wildlife populations by affording an added level of protection of water quantity and quality and riparian habitat to meet wildlife needs.

Alternative D would also recommend certain sections of free flowing waters for inclusion in the Wild and Scenic Rivers System. These designations would not change the protection afforded them under Alternative A, but would increase their chances of keeping those protective measures in place over a longer period.

- Mill Creek (Indian Valley) 5.0 miles Wild
- Panther Creek (South Cow Mountain) 3.0 miles Scenic
- Scotts Creek (South Cow Mountain) 13.0 miles Scenic
- South Fork Scotts Creek (South Cow Mountain) 3.0 miles Scenic

4.3.6.2 Cow Mountain

Alternative D would also recommend about 7 miles of Morrison Creek for inclusion in the Wild and Scenic Rivers System. This designation would not change the protection afforded it under Alternative A, but would increase its chance of keeping those protective measures in place over a longer period. Alternative C (Preferred Alternative) recommends a 40-acre Lost Valley ACEC. This designation would result in long-term positive impacts to wildlife and fish in the Cow Mountain management area.

4.3.6.3 Knoxville

Under Alternative B 1,756 acres of public lands in the Knoxville management area would be designated as the Knoxville ACEC. Alternative C (Preferred Alternative) would include 5,236 acres while Alternative D would include 24,346 acres. Larger acreages managed under the ACEC guidelines would increase the long-term beneficial impacts on wildlife resources, as a larger area will stay intact and essentially free from most developments.

4.3.6.4 Indian Valley

Alternative B would expand the Indian Valley Brodiaea ACEC to 100 acres by adding another 60 acres of Brodiaea habitat along Stanton Creek. Alternative C (Preferred Alternative) would designate the Walker Ridge ACEC to include approximately 3,990 acres while Alternative D would increase the acreage for designation to approximately 8,784 acres. All of these actions would have a moderate to major long-term beneficial impact to wildlife resources. Larger acreages managed under the ACEC guidelines would increase the long-term beneficial impacts on wildlife resources.

4.3.6.5 Cache Creek

Alternative B would manage 1,848 acres, Alternative C (Preferred Alternative) would manage 4,913 acres, and Alternative D would manage 18,626 acres immediately adjacent to the Cache Creek WSA for their wilderness characteristics. This would have a moderate to major long-term beneficial impact to wildlife

resources. Larger acreages managed under the WSA guidelines would increase the long-term beneficial impacts on wildlife resources, as a larger area will stay intact and essentially free from most developments.

Alternative C would also recommend about 24 miles of Cache Creek for inclusion in the Wild and Scenic Rivers System while Alternative D would recommend an additional 2.0 miles along Cache Creek,13 miles along Scotts Creek, 3 miles along South Fork Scotts Creek, 0.6 miles along McClure Creek, and 5 miles along Mill Creek. These designations would not change the protection afforded them under Alternative A, but would increase their chances of keeping those protective measures in place over a longer period.

4.3.6.6 Cedar Roughs

Alternative B (Preferred Alternative) would expand the Cedar Roughs ACEC to 6,350 acres by adding approximately 753 acres to the existing ACEC, thereby encompassing the entire acreage of BLM lands within Cedar Roughs area. This would have a moderate to major long-term beneficial impact to wildlife resources.

4.3.6.7 Stornetta

Alternative B would designate the Stornetta ACEC to include approximately 887 acres of BLM managed lands, from Hathaway Creek, west to the Pacific Ocean, and south of the Garcia River. This would have a moderate to major long-term beneficial impact to wildlife resources.

Alternative C (Preferred Alternative) would also recommend about 2.25 miles of the Garcia River for inclusion in the Wild and Scenic Rivers System while Alternative D would also recommend an additional 2.0 mile along Hathaway Creek. These designations would not change the protection afforded them under Alternative A, but would increase their chances of keeping those protective measures in place over a longer period.

4.3.6.8 Scattered Tracts

Alternative B would designate the Black Forest ACEC to include approximately 781 acres of BLM managed lands on Mount Konocti.

Alternative C (Preferred Alternative) would designate the BLM public lands known as "The Cedars of Sonoma County" as an ACEC. The total acreage of this unique environment is estimated at 5,000 acres, and is located 4 miles north of the town of Cazadero, California. Alternative C would designate the Lost Valley Meadow area as an ACEC by including 40 acres of BLM managed lands within the Miner's Ridge watershed of the Russian River Drainage system. Alternative D would designate the Blue Ridge as an ACEC by including approximately 13,640 acres in two individual units separated by the Fiske Creek drainage. Alternative D would designate the four scattered tracts comprising approximately 558 acres of BLM public lands on the Quail Ridge peninsula adjacent to Lake Berryessa as an ACEC. All of these actions would have a moderate to major long-term beneficial impact to wildlife resources.

4.3.7 Impacts on Wildlife and Fish from Forest Management

Forest lands will be managed to protect and/or enhance recreational and biological resources. Forests suitable for commercial harvest exist on public lands only in the Cow Mountain area and in the Scattered

Tracts area west of Highway 101, and the Black Forest. No commercial timber harvest would be allowed at any management area. Alternative A is the Preferred Alternative for forest management decisions in all management areas.

4.3.7.1 Common to All Management Areas

The management proposed under the RMP will result in a minor to moderate long-term beneficial impact to wildlife resources.

4.3.8 Impacts on Wildlife and Fish from Livestock Grazing Management

Grazing is not a large component of the Ukiah Field Office, and as such has little effect on the wildlife communities and habitats within the area. All Alternatives allow grazing to be used as a tool for vegetation management (e.g., weed eradication and/or maintenance of fire lines or prescribe burns). This activity would have a minor beneficial impact on wildlife resources.

In many of the management areas, Alternative D allows for grazing on any suitable land (see Livestock Grazing Management, Section 2.11). It is uncertain to what extent these lands would be utilized; however, these future uses would have to adhere to BLM rangeland standards. These activities would result in negligible to minor long-term negative or positive impacts to wildlife resources.

4.3.8.1 Cow Mountain

Cow Mountain currently has no active leases. Alternatives C and D would allow former allotments to be grazed and livestock to be used on suitable lands. If these leases were activated, the impacts on wildlife resources would depend on the specific situations, ranging from negligible to minor negative impacts to minor positive impacts on wildlife resources. Alternative A (current situation) is the Preferred Alternative in the Cow Mountain management area.

4.3.8.2 Knoxville

There are two active leases and Alternatives A and C (Preferred Alternative) allow for these to remain open. Additional lands would be available to selective grazing for weed or fuel reduction. Assuming the land adheres to the rangeland standards, these activities would result in a negligible to a minor beneficial impact on wildlife resources.

Alternatives B would not allow for grazing upon relinquishment of the current lease. Only additional grazing would be used as a tool. These activities would have a negligible to minor beneficial long-term impacts on wildlife resources.

Alternative D also allows for livestock use on other suitable lands. Alternative D also allows for post fire grazing under strict conditions. This activity could result in a minor beneficial short-term impact on some wildlife species, but may have a short-term negative impact on other species.

4.3.8.3 Indian Valley

Alternatives and impacts to wildlife resources are similar to those at Knoxville, please refer to Section 4.3.8.2 above.

4.3.8.4 Cache Creek

All alternatives are the same. Cache Creek Natural Area has no active grazing leases and these would not be re-opened. Only selective grazing could occur for the reduction of weed infestations. These actions would have a beneficial long-term impact on wildlife resources. Alternative A (current situation) is the preferred alternative for livestock grazing management decisions in Cache Creek.

4.3.8.5 Cedar Roughs

Alternatives and impacts are similar to those described under Knoxville (see Section 4.3.8.2).

4.3.8.6 Berryessa

Berryessa has two active grazing leases and the alternatives and impacts are similar to Knoxville (see Section 4.3.8.3). Alternative C (Preferred Alternative) allows for one of these allotments (Rocky Ridge) to remain active. Impacts on wildlife resources associated with this active lease are considered negligible.

4.3.8.7 Stornetta

The Stornetta Ranch will continue livestock grazing until July, 2014 under the agreement in the land transfer. Continued livestock use will be determined after evaluation of the range land conditions. All alternatives include this and only Alternative D allows for maximum forage production, and would allow for construction of facilities to support a more intense livestock use. Additionally, Alternative D would convert exotic unpalatable species with native palatable species.

Under Alternatives A, B and C (Preferred Alternative), continued livestock grazing would result in a beneficial impact to most wildlife resources within the acceptable grazing areas. Grazing could be a tool for maintaining habitat for *Viola adunca* (the host plant for the Behren's silverspot butterfly) and as a means for invasive weed management. These actions would have a positive long-term impact on wildlife resources.

Alternative D achieves the same effects, but the more intense grazing may have a minor long-term negative impact on wildlife resources by removal of habitat through construction of facilities. The conversion of non-native palatable forage with native forage would have a minor to moderate long-term beneficial impact on wildlife resources.

4.3.8.8 Geysers

The Geysers do not have active leases and the alternatives and impacts are similar to Cache Creek. Please refer to Section 4.3.8.4 for the discussion. Alternative A (current situation) is the Preferred Alternative for livestock grazing management decisions in the Geysers.

4.3.8.9 Scattered Tracts

Alternatives and impacts are similar to Knoxville with the exception of lands designated for disposal would not be grazed. Please refer to Section 4.3.8.2 for the discussion.

4.3.9 Impacts on Wildlife and Fish from Fire Management

Fire management actions fall into three categories: Wildlife Suppression, Fuels Management and Habitat Management. The science of fire management has undergone rapid and extensive evolution in regards to its impacts on natural systems and wildlife resources. California and the west have experienced a shift from what was likely regular "prescribed" burning by indigenous people, to a period of aggressive fires suppression to a current view that fire is an important component in the evolution of many habitats.

Alternative C is the Preferred Alternative for fire management decisions (prescribed burning and mechanical treatment) throughout the planning area.

4.3.9.1 Common to All Management Areas

Wildfire suppression actions throughout the Ukiah Field Office areas follow a FMP that incorporates protection of wildlife resources. As such, there would be a minor to moderate positive impact on wildlife resources from Wildfire Suppression and Fuels Management activities.

A more detailed analysis of the impact of the Habitat Management component of the Fire Management plan as a result of prescribed burning can be found under Impacts to Wildlife and Fish from Wildlife Management.

4.3.10 Impacts on Wildlife and Fish from Minerals

All alternatives allow for a majority of Ukiah lands to be available for both solid and fluid minerals leasing and mineral materials disposal. Some alternatives recommend withdrawal of certain lands from mineral entry.

Alternative A (current situation) is the Preferred Alternative for mineral management decisions (fluid/leasable and solid minerals) in the entire planning area, except for Cache Creek, Cedar Roughs, and Stornetta (solid minerals). Alternative C is the Preferred Alternative for the Cache Creek and Cedar Roughs management areas (fluid/leasable and solid minerals), and Alternative B is the Preferred Alternative for solid minerals management decisions in Stornetta.

4.3.10.1 Common to All Management Areas

Lands which would be developed for minerals extraction would have the potential for short- or long-term minor to moderate negative impacts to wildlife resources due to direct impacts from vegetation removal during minerals exploration, and extraction and materials disposal. Species found on these lands include blacktail deer, black bear, quail, and dove (primarily game species). There are also small mammals and migratory bird species that could be found in these areas as well. Most wildlife species will avoid areas of intense development and will move away from mineral activities. This is particularly true with the larger mammals.

Alternative A does not propose further lands to be withdrawn from minerals leasing beyond what is currently withdrawn. This would have a negligible to moderate negative impact on wildlife resources depending on what lands were eventually used developed for minerals extraction.

Alternative B allows for 5,000 acres of the Cedars ACEC, and Stornetta to be withdrawn from minerals leasing and mineral materials disposal. Additionally, 34,000 acres within Cache Creek and 5,600 acres of the Cedar Roughs WSAs, and Stornetta would be closed to fluid minerals leasing. These increased acres of protected habitat would have a long-term beneficial impact on wildlife resources.

Alternatives C and D are the same and are cumulative to Alternative B, with the exception that the Cedars ACEC is not withdrawn from mineral exploration and extraction. The addition of the withdrawal of Black Forest and Cache Creek management area from minerals leasing is proposed. Fluid minerals leasing would also be withdrawn from the entire Cache Creek management area, and additional 750 acres at Cedar Roughs management area, the Black Forest, and 5,000 acres of the Cedars ACEC. These actions would be considered the most beneficial of all of the alternatives to wildlife resources.

4.3.11 Impacts on Wildlife and Fish from Wind Energy

Under each alternative, specific wind energy development project proposals on public lands managed by the Ukiah Field Office, which are not in exclusion areas, would be considered through ROW grants, in accordance with the FLMPA and BLM policy.

Alternative B is the Preferred Alternative for wind energy management decisions in Cow Mountain, Cache Creek, Cedar Roughs, Stornetta, the Geysers, and the Scattered Tracts. Alternative D is the Preferred Alternative for the Knoxville, Indian Valley, and Berryessa management areas.

4.3.11.1 Common to All Management Areas

Under Alternative A, wind energy applications are analyzed on a case-by-case basis. Other Alternatives name specific exclusion areas. These exclusion areas would decrease potential impacts especially on migrating birds and bats and so would have a minor to moderate long-term beneficial impact on wildlife resources.

4.3.12 Impacts on Wildlife and Fish from Travel Management and Route Designation

Travel management policies would continue to have both negative and positive impacts on wildlife resources. Negative impacts may be summarized as direct impacts to wildlife in the form of noise, disturbance and direct collision, and indirect impacts as a result of habitat modification. Larger mammal species, such as blacktail deer and black bear, will be most impacted by routes of travel. The Cache Creek Natural Area, which includes some of the most critical habitat for a number of species, is closed to vehicles. Periphery routes would have some impact, but large mammals here will not be significantly impacted. Existing routes of travel traversing Indian Valley, Knoxville, and Cow Mountain will have a greater impact to the large mammals due to the larger number of roads and considerable use at certain times of the year.

Positive impacts could result if travel management policies direct vehicular or other traffic away from areas important for wildlife. Additionally, effective signing, road barriers or other physical enhancements may also reduce negative impacts on wildlife resources.

Alternative A is the Preferred Alternative for travel management and access decisions in Cache Creek, Cedar Roughs, and Berryessa. Alternative B is the Preferred Alternative for the Indian Valley

management area. Alternative C is the Preferred Alternative in Cow Mountain, Knoxville, Stornetta, the Geysers, and the Scattered Tracts.

4.3.12.1 Common to All Management Areas

Alternatives that close and rehabilitate roads that are negatively impacting habitat would have a minor to moderate long-term positive impact on wildlife resources. The construction of new roads would have a minor to moderate short-term negative impact on wildlife resources during construction and would also result in a minor to moderate long-term negative impact on wildlife resources. To the extent that new roads reduce traffic to some areas and allow other roads to be rehabilitated, there could be a minor offsetting long-term positive impact to wildlife resources. More analysis is presented under Section 4.3.14, Impacts on Wildlife and Fish from Recreation Resources.

4.3.13 Impacts on Wildlife and Fish from Recreation Resources

Most impacts to wildlife and fish from recreation resource planning alternatives are related to the removal and rehabilitation recreational access, trailheads, facilities, campgrounds, and human disturbance. Where trails are to be removed and rehabilitated, minor but short-term negative impacts to wildlife could occur, but the concomitant minor to moderate long-term positive impacts should result. Where trails, trailhead facilities and campgrounds are planned, minor to moderate local and long-term negative impacts to wildlife resources could occur. To the extent that these newer developments aid in managing visitor use to concentrate impacts around developed areas, minor to moderate positive long-term impacts to wildlife resources could occur in the undeveloped areas. Negative impacts will also occur due to human disturbance of previously undeveloped and/or undisturbed areas.

4.3.13.1 Common to All Management Areas

Alternative A would continue present management throughout all areas with exceptions noted below. In general, the least amount of management and control over recreation uses would occur under Alternative B, with Alternatives C and D having progressively more control of recreational uses, both in geographic extent and in the BLM's ability to charge user fees that would go to maintain these facilities. In places where existing recreational use is high, the more involved Alternatives C and D would have more of a positive impact on wildlife resources, where in places where visitor use is low, Alternative B would avoid short-term negative impacts from construction activities and long-term impacts from attracting more visitor use.

4.3.13.2 Cow Mountain

The alternatives continue management of Cow Mountain with a focus on divided areas for non-motorized (North Cow Mountain) and motorized (South Cow Mountain) recreation.

North Cow Mountain receives a high amount of visitor use. Alternative A would continue the maintenance of visitor facilities, including trailheads, trails, signs, interpretive material and some on site presence. Alternative B calls for the removal of existing BLM camping sites in the Backcountry Zone and trails using fire breaks/roads. Little or no management or monitoring of visitor use would be planned. Since this is a fairly high use area, this alternative would result in minor to moderate long-term negative impacts to wildlife resources. Alternatives C (Preferred Alternative) and D include removing

and rehabilitating some trails and the potential development of more trails and trailheads. The extent and location of these trails and trailheads would determine the impacts. There would likely be a short-term minor negative impact to wildlife resources from the construction of these facilities, with a minor long-term negative impact as a result of increased visitor use. A moderate long-term positive impact could results from concentrating visitor use in managed areas.

South Cow Mountain also receives a high amount of visitor/vehicle use with concomitant BLM management commitments. Present management would likely result in long-term minor to moderate negative impacts to wildlife resources. Alternative B would also likely result in long-term minor to moderate negative impacts to wildlife resources due to the lack of visitor management. Alternatives C and D are characterized by more development of visitor facilities, including re-routing of trails. The extent and location of these trails and trailheads would determine the impacts. There would likely be a short-term minor negative impact to wildlife resources from the construction of these facilities, with a moderate long-term negative impact as a result of increased visitor use. A minor long-term positive impact could results from concentrating visitor use in managed areas.

4.3.13.3 Knoxville

Alternative A (Preferred Alternative) would continue management of Knoxville with a focus on providing motorized, non-motorized and mechanized recreational opportunities. A minor to moderate negative impact to wildlife resources is occurring under this management. Alternative B would close some trails and reduce this impact to a small degree. Alternatives C and D include removing and rehabilitating some trails and the potential development of more trails and trailheads. The extent and location of these trails and trailheads would determine the impacts. There would likely be a short-term minor negative impact to wildlife resources from the construction of these facilities, with a minor long-term negative impact as a result of increased visitor use. A moderate long-term positive impact could results from concentrating visitor use in managed areas.

4.3.13.4 Indian Valley

Alternative A would continue management of Indian Valley as a multiple use recreation area. A lack of a dispersal system, the use of unmaintained old fire breaks and mining roads with its associated trail erosion is resulting in a minor to moderate negative long-term impact to wildlife resources. Alternative B would improve this situation by closing and rehabilitating some of these routes and developing a manageable and sustainable trail network resulting in a minor to moderate long-term positive impact to wildlife resources. Alternative C (Preferred Alternative) includes potential development of trails and trailheads; Alternative D would add trailhead facilities in the Frontcountry Zone. The extent and location of these trails, trailheads, and campground would determine the impacts. There would likely be a short-term minor negative impact to wildlife resources from the construction of these facilities, with a minor long-term negative impact as a result of increased visitor use. A moderate long-term positive impact could results from concentrating visitor use in managed areas.

4.3.13.5 Cache Creek

Alternative A would continue management of Cache Creek with a focus on the interim WSA while secondarily providing for compatible recreational uses. There would be little or no new trails development and under Alternative B, some trials and trailheads would be removed. These alternatives

would have a negligible to minor positive impact to wildlife populations. Alternatives C (Preferred Alternative) and D propose to develop more trails, campgrounds, and other visitor facilities, especially in the Middlecountry, Frontcountry and Rural Zones. These developments could result in minor to moderate short-term negative impacts to wildlife resources during construction activities, and minor to moderate negative or positive long-term impacts to wildlife resources, depending on the extent and distribution of these trials and any increase in visitor usage.

4.3.13.6 Cedar Roughs

Alternatives A and B will continue management of Cedar Roughs with a primary focus on the interim WSA while secondarily providing for compatible recreational uses. These alternatives will have a negligible impact on wildlife resources. Alternative C (Preferred Alternative) includes development of trails and trailheads; Alternative D would add a full campground. The extent and location of these trails, trailheads, and campground would determine the impacts. There would be a likely short-term minor negative impact to wildlife resources form the construction of these facilities, with a minor long-term negative impact as a result of increased visitor use. A minor long-term positive impact could results from concentrating visitor use in managed areas.

4.3.13.7 Berryessa

The Berryessa management area is surrounded by private property with no public access. Alternatives A (Preferred Alternative) and B have no action, and no real consequence, C and D would develop a few trails. Impact would depend on how the trails modify the probably low level of existing use across private property and level of increase of use because of trails.

4.3.13.8 Stornetta

Alternative A would have a minor to moderate negative impact to wildlife resources in the short-term because there would be little or no visitor management and sensitive areas could be impacted. Future impact in this alternative would depend on the extent and distribution of developed trails, with a minor short-term negative impact associated with the trail construction activities but minor to moderate long-term positive impact to wildlife resources as a result of concentrating visitor use away from sensitive areas. More established trails could be developed in Alternatives C (Preferred Alternative) and D, including a portion of the California Coastal Trail and an access across the Garcia River. The results of developing these trails could result in minor to moderate short-term negative impacts to wildlife resources during construction activities, and minor to moderate negative or positive long-term impacts to wildlife resources, depending on the extent and distribution of these trials and the concomitant increase in visitor usage.

4.3.13.9 Geysers

Alternatives A and B keep low level of use and management with a resulting negligible impact to wildlife resources. Alternative C (Preferred Alternative) includes development of trails and trailheads; Alternative D would add a full campground. The extent and location of these trails, trailheads, and campground would determine the impacts. There would be a likely short-term minor negative impact to wildlife resources form the construction of these facilities, with a minor long-term negative impact as a result of

increased visitor use. A minor long-term positive impact could results from concentrating visitor use in managed areas.

4.3.13.10 Scattered Tracts

For many if not most of these parcels, there is no legal access with the exception of the adjacent private landowners, consequently visitor use is low. Alternative A would keep existing trails and monitor for resource conflicts resulting in negligible impacts to wildlife resources. Alternative B would remove and rehabilitate certain existing trails and install minimal signs resulting in negligible to minor positive impacts to wildlife resources. Alternatives C (Preferred Alternative) and D would explore trail development in these scattered tracts and potentially result in minor long-term negative impacts to wildlife resources, unless unmanaged use of these parcels increases substantially, and then the concentrating affect of trail development could result in a concomitant minor but long-term positive impact to wildlife resources. The development of a trail system in the Black Forest parcel could have minor short-term negative impacts to wildlife resources, but if visitor use increases there could be some offsetting long-term positive impacts to wildlife resources resulting from concentrating visitor impact in a smaller area.

4.3.14 Impacts on Wildlife and Fish from Soil Resources

Soil resource management under the proposed RMP is primarily focused on reducing sediment runoff into watercourses. Alternative C is the Preferred Alternative for soil resources decisions throughout the planning area.

4.3.14.1 Common to All Management Areas

All alternatives include a component of reducing sediment input into watercourses, therefore resulting in a minor to moderate long-term positive impact to fish populations. Alternatives C and D are more aggressive at treating problems and would consequently have an incrementally increased positive impact.

4.3.14.2 Stornetta

Alternative C, which includes fencing to exclude cattle from watercourses and wetlands, could have a minor to moderate long-term beneficial impact to wildlife using riparian habitat.

4.3.15 Impacts on Wildlife and Fish from Water Resources

The overall objective for managing water resources in the proposed RMP is to allow natural processes to take place and to intervene where problems are identified. Alternative B would emphasize the natural processes with little intervention, while Alternatives A and C would include a proactive approach to assessing and repairing problems. Alternative D would be the most aggressive at detecting problems and intervening when problems are identified. Alternative C is the Preferred Alternative for water resources decisions throughout the planning area.

4.3.15.1 Common to All Management Areas

To the extent that some of the water resource activities include restoration of riparian and wetland systems, a minor positive impact on wildlife populations could occur. Fish populations would also benefit from activities associated with repairing water resource problems.

4.3.16 Potential Cumulative Impacts to Wildlife and Fish

The Ukiah Field Office's lands are surrounded by the ever expanding population of California. Pressures for extraction of resources, infrastructure expansion, energy supply, urban and rural expansion, and the public's need to recreate see no end. Cumulative impacts from a variety of pressures can range from large subdivisions, highway or road expansions, landfill locations, urban interface wildfire protection, increased recreation, and other community needs adjacent to public lands. These foreseeable developments in the region concurrent with the allowable uses discussed in this document can have major impacts on vegetation, wildlife habitats and special status species.

4.4 IMPACTS ON VEGETATION MANAGEMENT

The majority of the proposed resource activities would not have major impacts to vegetation management, habitats and special status plants. Most impacts would be localized and would be short-term effects, although the potential for long-term localized impacts exist.

4.4.1 Impacts on Vegetation Management from Visual Resources Management

Impacts from visual resources would not likely effect vegetation, habitats or special status plants. The values of visual resource management appreciate vegetation communities within the viewshed.

4.4.2 Impacts on Vegetation Management from Wildlife and Fish

All alternatives are relatively similar with respect to their effects on vegetation, habitats and special status plant species. Alterative C is the Preferred Alternative for wildlife and fish management decisions in all management areas, except Cache Creek. Alternative B is the Preferred Alternative in the Cache Creek management area.

4.4.2.1 Common to All Management Areas

The majority of the actions proposed for wildlife and fisheries management under all alternatives would be considered either to have negligible or beneficial effects to vegetation, habitat and special status plants. Actions which eradicate or control noxious weeds, restore fisheries, and wildlife habitats are generally helpful for vegetation community assemblage and special status plant species. These actions generally facilitate plant species diversity and community type enhancement. Some actions may cause short-term localized impacts while enhancements are being implemented but these would be off-set as vegetation would recover over time.

Exceptions are the introduction and increased stocking of certain species; whether native or not. Species such as wild turkey and tule elk can cause significant impacts to vegetation communities should these species become concentrated. Current levels of these species appear not to be detrimental to vegetation;

however, overstocking can reduce regeneration of riparian plant species and have the potential to impact populations of special status plants. Additionally, selected actions for some game species such as black-tailed deer foraging habitat and California quail habitat may not allow for plant species diversity or special status plant habitat protection or enhancement. Such actions may be considered minor to moderate short- or long-term impacts to vegetation communities and special status plant species.

4.4.3 Impacts on Vegetation Management from Vegetation Management

The majority of the management tools proposed for vegetation management are for weed management. However, a portion of these are reserved for habitat management. Three major weed treatments include burning, chemical and mechanical (i.e., mowing, hand pulling) applications. Burning may be used for both weed management and habitat management. While most treatments will have the same effect as the current management actions, some actions have the potential effect to vegetation communities over the long-term. Impacts from vegetation management range from short-term minor impacts to long-term major impacts. The majority of these impacts are positive. For fuels treatment, see fire management. With the exception of Stornetta ranch the following discussion applies to all management areas.

4.4.3.1 Common to All Management Areas

All alternatives have components intended to reduce noxious weed infestations and modify habitat. The bulk of noxious weeds are found within the grasslands and riparian communities. The use of certified weed free straw for all livestock activities is included for all alternatives. Using weed free straw would help reduce any unintended introduction of noxious weed propogules, which would be considered a long-term beneficial action. Alternative A would have little change from the current conditions of most management areas. Prescribed burning along with chemical and mechanical treatments would be used to reduce weed populations and would be considered a long-term beneficial impact. Impacts from prescribed burns intended to modify habitat would have varying effects to vegetation. These impacts would vary from moderate short-term negative effects to moderate long-term beneficial effects. Any negative short-term effects by loss of vegetation would be rapidly offset by the future re-growth of shrubs and the germination species which require fire for their lifecycle. Without fire, the composition of vegetation communities would become limited in species diversity and extent. However, concern for the frequency of prescribed burns should be warranted. Burns occurring near 10 year frequencies have a tendency to alter community composition and select toward a more monotypic community. This is especially true for grassland and chaparral communities.

Alternative B includes or allows for prescribed burning but is reduced in acreage compared to Alternative A. Alternative B also reduces management activities by not recommending mechanical or chemical treatments for weed populations. These actions would be similar in nature to Alternative A but would not use other means to reduce weed populations. This would be considered a negative minor to moderate impact to plant communities, effective control of noxious weeds by burning alone may not be accomplished potentially allowing infestations to increase in size and distribution.

Alternative C (Preferred Alternative) is similar to A; however, more acres of prescribed burns are allowed and the use of herbicides is proposed. Both prescribed burns and herbicide application represent a more directed management for the control of noxious weeds. Each management area has a targeted species and acreages allotted for treatment which include the use of fire, mechanical or pesticide use.

These actions would be considered a long-term moderate beneficial impact to vegetation communities. The acres of prescribed burns are slightly increased and the effects of prescribed burning would be similar to B. Alternative C overall is more beneficial to vegetation communities due to targeted weed management, and the moderate amount of prescribed burning for habitat enhancement.

Alternative D is similar to C but has more acres of prescribed burning. While allowing the creation of diversity of vegetation communities through management tools such as fire is a beneficial impact, these actions should mimic the natural fire regimes to the extent possible. The actions for controlling weed infestations are similar to Alternative C and the impacts are similar.

4.4.3.2 Stornetta

Most alternatives would have similar impacts to the vegetation communities at Stornetta. While livestock grazing as a tool is discussed, it is not directly shown within the alternatives. It should be considered as part of the noxious weed and vegetation management program at Stornetta, specifically within the pasture lands. Grazing would keep native blackberry shrubs to a minimum, and allow for the continued existence of *Viola adunca*, a native violet which is the larval host plant of the federally endangered Behren's silverspot butterfly. Should cattle be pulled off the coastal prairie, it is likely a conversion of the community type would occur. These conversions would be considered a negative moderate to major long-term impacts.

4.4.4 Impacts on Vegetation Management from Riparian and Wetland Resources

4.4.4.1 Common to All Management Areas

Alternatives A, B, and C (Preferred Alternative) for riparian and wetland resource management would have negligible effects to terrestrial vegetation. Loss of riparian communities might occur along waterways not meeting the PFC criteria but restoration activities may enhance and stabilize new riparian habitats. Alternative D has the greatest potential for the reduction in the loss of riparian habitat and would have a positive long-term beneficial effect for vegetation, habitats and special status plant species. Restoration would occur similar to the other alternatives.

4.4.5 Impacts on Vegetation Management from Lands and Realty

Alternatives for Lands and Realty are similar in nature but differ in intensity for each management area. The majority of the alternatives for most management areas would result in negligible or minor impacts, though the potential for habitat fragmentation and impacts to special status plants does exist. NEPA analysis would disclose potential impacts to special status plant populations and should limit any impacts to these sensitive resources.

4.4.5.1 Cow Mountain

Actions under Land Use Authorization are similar for all Alternatives. Alternative A would require those applying for new ROW and utility infrastructure projects to consolidate facilities and ROWs. This would be a long-term beneficial action due to the likelihood that impacts to vegetation communities and special status species from projects would be minimized. However, it does not require ROW designations or use

areas for communication sites. This would be considered a long-term minor impact due to the possibility of widespread but small acreage impacts to plant communities.

Alternatives B and C (Preferred Alternative) are similar to A except under communication sites, where B would limit sites to two- the Purdy Garden and the North Cow communications sites, but would not designate a ROW corridor. Alternative C is the same as B with the exception of requiring a right-of-way corridor designation. Both alternatives would lessen long-term minor impacts to vegetation but Alternative C would allow for concentration of impacts to a designated corridor.

Alternative D is similar to A except that it would not allow for new ROW applications, thus actions under D would have no negative impacts and would have a long-term beneficial effect on vegetation resources.

Land Tenure – Alternatives for Cow Mountain are similar in nature and would generally have no impacts to vegetation and habitats by not designating lands as available for disposal. Lands which have special status plants would not be eligible for disposal. Lands retained under BLM management are generally subject to higher standards of management than private lands.

4.4.5.2 Knoxville

Land Use Authorization – all alternatives for land use are the same. Impacts to vegetation and habitat would result in minor long-term impacts as a result in no designated ROW corridors.

Land Tenure – All alternatives are similar with minor differences. Lands are identified for retention in Knoxville though some lands may be exchanged or acquired in order to consolidate lands and capitalize on management opportunities. Alternative A allows for acquisition, Alternative B allows for exchange and acquisition, and Alternative C (Preferred Alternative) allows for only exchange. These actions would generally result in minor beneficial long-term impacts as land management would be maximized and vegetation and habitat would be managed similarly. Special status plant populations and their habitat would be retained.

4.4.5.3 Indian Valley

Land Use Authorization – Alternative A proposes no specific areas for utility, communication or other ROW applications. This would be considered negligible to minor long-term impacts to vegetation, resources. Alternative B proposes limiting communication sites but would not designate a ROW corridor. This action would have negligible or a minor long-term impact due to the potential for numerous ROWs. Alternative C (Preferred Alternative) would have minor beneficial long-term impacts as it is similar to B but would designate a right-of-way corridor. Alternative D would have the most beneficial impacts to vegetation and habitat as it would not allow new right-of-way applications.

Land Tenure- Impacts associated with these alternatives are similar to those under Land Tenure for Knoxville (see Section 4.4.5.2).

4.4.5.4 Cache Creek

Land Use Authorization – Alternatives A and B would have similar impacts as no right-of-ways would be designated and only the Cache Creek WSA would not allow for ROWs or other utility infrastructure projects. Both of the alternatives would be considered negligible to minor long-term impacts to vegetation and habitat. Alternative C (Preferred Alternative) would designate a right-of-way corridor which would be considered a negligible or minor impact. Alternative C proposes closing the Cache Creek to ROW applications, this would be considered a beneficial long-term positive impact.

Land Tenure – Alternatives for Land Tenure would generally have no impacts or minor beneficial impacts, such as under Alternative C, where land maybe exchanged for management purposes or for their unique resources.

4.4.5.5 Cedar Roughs

Land Use Authorization – For areas outside the WSA all alternatives would have negligible to minor long-term impacts since no ROW corridors would be designated and applications would be considered on a case by case basis.

Land Tenure – The alternatives and impacts for Cedar Roughs are similar to Cache Creek, please refer to Section 4.4.5.4, above.

4.4.5.6 Berryessa

Land Use Authorization – Alternative A would be considered negligible to minor long-term impact to vegetation and habitat because no designated right-of-way corridors or locations would be identified. Alternative B would be a negligible to minor negative long-term impact for the location of only one communication site and no designated right-of-way corridor. Alternatives C (Preferred Alternative) and D would both have positive impacts with the most beneficial long-term impacts associated with Alternative D as it would not allow new ROW applications.

Land Tenure – Alternatives and impacts for Berryessa are similar to those described under Cache Creek, please refer to Section 4.4.5.4, above.

4.4.5.7 Stornetta

Land Use Authorization – Alternative A would designate the area a ROW avoidance area, which would have major beneficial long-term effects. Alternative B would consider ROWs applications and would not designate a corridor. These actions would be considered a major long-term effect to vegetation and habitat. Alternative C (Preferred Alternative) is only slightly more beneficial in that it would designate a corridor. Alternative D would be similar to A and would have the same beneficial effects.

Land Tenure – All alternatives would not allow for land exchange to occur at Stornetta. Alternative A retains these lands without acquisition of other properties, this action would have no negative effects. Alternatives B, C, and D are all similar and would allow for acquisition of other properties adjacent to Stornetta; these actions could have beneficial long-term effects to plant communities by allowing for similar cohesive land management to occur.

4.4.5.8 Geysers

Land Use Authorization – Alternatives and impacts are similar to Cache Creek (see Section 4.4.5.4) with the exception that the Geysers has no WSA. While the Geysers contain developed geothermal facilities, impacts to special status plants could be considered significant. Alternative D would be the most beneficial to vegetation resources.

Land Tenure – Alternative A does not allow for land exchange in areas designated for geothermal use and as such there would be no effects. Alternatives B, C (Preferred Alternative), and D are similar to A but allow for exchange of lands which have no public value, therefore lands which have habitat to special status plant species would be retained. There would be negligible effects.

4.4.5.9 Scattered Tracts

Land Use Authorization – Alternatives and impacts are similar to those described under Indian Valley (see Section 4.4.5.3).

Land Tenure – Alternative A retains lands with certain resource values and allows for disposal of those lands which do not fall within these criteria. This criterion applies to special status plants and areas such as The Cedars would be retained for the unique botanical resources. The long-term benefit would be the potential for better management of contiguous Ukiah lands. Alternative B (Preferred Alternative) is similar to A. Alternative C is the same as B and Alternative D would retain all lands, which would have negligible impacts.

4.4.6 Impacts on Vegetation Management from Special Designations

Most of the special designations within the Ukiah Field Office are for the protection of unique botanical resources with the exception of wilderness areas. Wilderness areas inherently add some level of protection to vegetation communities and habitat due to restrictions on the types of use such as OHVs, developed recreation facilities and minerals extraction uses.

Alternative C is the Preferred Alternative for special designations management decisions in all management areas, except Cedar Roughs, Berryessa, and the Geysers. The Preferred Alternative for Berryessa and the Geysers is Alternative A, while Alternative B is preferred for Cedar Roughs.

4.4.6.1 Common to All Management Areas

Alternative A proposes no new special designation additions; therefore the impacts would be negligible. Alternative B would maintain existing ACECs and expand Cedar Roughs and Indian Valley ACECs. Additionally, this alternative would designate Knoxville, Stornetta and the Black Forest as ACECs and manage additional lands adjacent to the Cache Creek WSA as wilderness. These additions would be considered beneficial long-term effects to plant communities, habitats and special status plants.

Alternative C is additive to B including expanding Knoxville ACEC, designating the Cedars, Lost Valley and Walker Ridge as ACECs. Additional acreage adjacent to Cache Creek WSA would be managed as wilderness. These actions would be considered more beneficial than those actions in Alternative B.

Alternative D is additive to C and would include further expansions of Knoxville and Walker Ridge ACECs. Blue Ridge and Quail Ridge would be designated as ACECs. The Cache Creek WSA would have even more acres managed as wilderness. These actions would be considered the most beneficial of all of the alternatives for plant communities, habitats and special status plant species.

4.4.7 Impacts on Vegetation Management from Forest Management

All alternatives for Forest Management are the same. Only the Scattered Tracts and portions of Cow Mountain have potential harvestable timber. Alternative A is the Preferred Alternative for forest management decisions throughout the planning area.

4.4.7.1 Common to All Management Areas

Since no actions are proposed other than for the preservation of forested lands, impacts would be negligible and may lead to beneficial long-term effects.

4.4.8 Impacts on Vegetation Management from Livestock Grazing Management

Grazing is not a large component of the Ukiah Field Office, and as such has little effect on the majority of the vegetation communities and habitats within the area. A relatively small portion of Ukiah's allotment lands are under lease. If livestock are concentrated, grazing can alter plant communities due to selective foraging and trampling of plants, leading to a reduction of species diversity which often tends toward weedy species. In areas where livestock congregate they may also compact soils thus causing erosion and poor germination of seedlings. Conversely, proper management livestock grazing may help control undesirable weedy species. Only the management areas which have grazing allotments or have the potential for using grazing as a tool are addressed below.

4.4.8.1 Common to All Management Areas

Where active livestock grazing is discontinued (Alternative B) the potential exists for the expansion of noxious or invasive species to occur. Selective grazing may help reduce these species but other eradication methods may be required to control the infestations. Where invasive species are likely to invade after grazing is terminated, this may be considered a minor negative long-term impact to vegetation, habitats and special status plants.

4.4.8.2 Cow Mountain

Cow Mountain currently has no active leases. Alternatives A (Preferred Alternative) and B are similar and either would have negligible impacts due to the selective use of grazing. Alternatives C and D would allow for former allotments to be grazed and livestock use on suitable lands. It is uncertain to what extent these lands would be utilized; however, these future uses would have to adhere to BLM rangeland standards. Impacts associated with these alternatives may result in negligible to minor long-term impacts. Additionally Alternative D but would allow for post fire grazing under strict conditions. This may be a beneficial short-term effect by reducing noxious plant species but may also reduce some preferable plant species within the affected community. A certain amount of controversy surrounds post fire livestock management. Many of the issues are site/community type/seasonal in nature and vary accordingly.

4.4.8.3 Knoxville

There are two active leases and Alternatives A and C (Preferred Alternative) are similar and would allow for these to remain open. Additional lands would be available to selective grazing for weed or fuel reduction. Assuming the land adheres to the rangeland standards, these impacts would be negligible to minor, especially for special status plants.

Alternatives B would not allow for grazing upon relinquishment of the current lease. Only additional grazing would be used as a tool. These impacts would be negligible and may be consider beneficial long-term effects, so long as invasive species are controlled.

Alternative D is similar to A and C keeping the allotments active but would allow for livestock use on suitable lands. It is uncertain to what extent these lands would be utilized; however, these future uses would have to adhere to BLM rangeland standards. Impacts to vegetation, habitats and special status plant would result in negligible to minor long-term impacts. Alternative D also allows for post fire grazing under strict conditions. As indicated above, this may be a beneficial short-term effect by reducing noxious plant species but may have a short-term effect by reducing some preferable plant species within the affected community.

4.4.8.4 Indian Valley

Alternatives and impacts to vegetation and habitat are similar to those at Knoxville, please refer to Section 4.4.8.3.

4.4.8.5 Cache Creek

All alternatives are the same (Preferred Alternative is Alternative A). Cache Creek Natural Area has no active grazing leases and these would not be re-opened. Only selective grazing could occur for the reduction of weed infestations. These actions would be considered a beneficial long-term effect.

4.4.8.6 Cedar Roughs

Alternatives and impacts are similar to those described under Knoxville (see Section 4.4.8.3).

4.4.8.7 Berryessa

Berryessa has two active grazing leases and the alternatives and impacts are similar to Knoxville (see Section 4.4.8.3). However, Alternative C (Preferred Alternative) allows for one of these allotments (Rocky Ridge) to remain active. Impacts associated with this active lease would be considered negligible.

4.4.8.8 Stornetta

The Stornetta management area will continue livestock grazing until July, 2014 under the agreement in the land transfer. Continued livestock use will be determined after evaluation of the range land conditions. All alternatives include this and only Alternative D allows for maximum forage production, and would allow for construction of facilities to support a more intense livestock use. Additionally, Alternative D would convert exotic unpalatable species with native palatable species.

Under Alternatives A, B and C (Preferred Alternative), continued livestock grazing would be considered a beneficial effect to most plant communities and habitats within the acceptable grazing areas. As outlined in Section 4.4.4.2, grazing should be seen as a tool for maintaining habitat for *Viola adunca* and as a means for invasive weed management. These actions would be considered a positive long-term effect.

Alternative D achieves the same effects, but the more intense grazing may affect the plant communities more negatively by putting more selective pressure on some desirable species and by removal of habitat through construction of facilities. These may be considered minor long-term impacts. The conversion of non-native palatable forage with native forage would be considered a beneficial long-term effect.

4.4.8.9 Geysers

The Geysers do not have active leases and the alternatives and impacts are similar to Cache Creek. Please refer to Section 4.4.8.5 for the discussion.

4.4.8.10 Scattered Tracts

Alternatives and impacts are similar to Knoxville with the exception of lands designated for disposal would not be grazed. Please refer to Section 4.4.8.3 for the discussion.

4.4.9 Impacts on Vegetation Management from Fire Management

Fire management has been integral to the settlement of the west; it has also been blamed as one of the many perturbations that have contributed to habitat conversions. Fire has been used as a tool to manage plant communities by Native Americans and by Euro-American to clear land suitable for farming. Fire suppression began in the 20th Century and allowed for the protection of economic interests such as timber and property. Fire suppression activities have been blamed for the build up of fuels, leading to more catastrophic fires, which in turn lead to changing the composition of plant communities. The role of fire on plant communities has only recently been the subject of extensive research. Historic fires have left little evidence behind forcing researchers to use a variety of creative tools for investigation. There is currently little consensus on the effects of fire suppression, fire as a tool, and wildfire as a component of natural succession.

Alternative C is the Preferred Alternative for all fire management decisions throughout the planning area.

4.4.9.1 Common to All Management Areas

Fire suppression activities require use of machinery, hand tools and human power to create fire lines and breaks. Machinery, tools and boots can carry noxious weed propagules and the breaks are prime sites for establishing noxious weed infestations. Impacts to vegetation resources, habitats and special status plants could be considered minor to major negative long-term effects should these activities introduce new populations of noxious weeds. Fire suppression activities should include consideration for staging areas within noxious weed areas and the tools used for suppression are free of noxious weed propagules.

Actions considered in the FMP, for the most part, consider the nature of sensitive areas such as ACECs and the actions in the plan are considered to have negligible to minor impacts.

Fuels management proposes utilizing two different treatments to reduce the potential for catastrophic fire. Both prescribed fire and mechanical treatments are recommended. Although much of the literature discussing impacts to plant communities from prescribed fire and mechanical treatments is contradictory, the use of fire is preferable to plant communities, habitats and special status plants. While not all plants are fire adapted, natural succession of a plant community is driven more by natural means than mechanical. For further discussion on prescribed burning, please refer to Vegetation Management, Section 4.4.3, for the discussion on impacts to vegetation and habitats.

The use of mechanical vegetation removal is sometimes necessary and would be considered a minor short-term negative impact to the communities in which is it is used, as proposed in Alternatives A, C, and D. Alternative B does not propose the use of mechanical vegetation removal and this would be the most beneficial alternative to vegetation communities and habitats. Alternatives A and C do not propose treatment to large acres of land. Alternative D doubles the acres to be mechanically treated; therefore, this alternative would be considered the least preferable with respect to vegetation, habitats and special status plants.

Fire rehabilitation, stabilization and restoration includes actions which would be beneficial for vegetation and habitats following fire, as the actions require native species to be used for reseeding to minimize noxious weed invasions. All other actions would have no impacts to vegetation, habitat and special status plants.

4.4.9.2 Cedar Roughs

Under Alternative D, the 35 year fire management cycle proposes to burn 100 percent of the management area. While this number is spread over a relatively long time frame, the impacts could be significant by keeping the community types at a lower seral stage, reducing the more natural patchiness of mixed age stands, which occur during naturally caused fires. While this type of management may in the short-term be a positive impact for certain special status plants, it may in the long run convert some of the plant communities to a more weedy undesirable composition or eliminate some species of plants altogether. Alternative D would have the potential to have the greatest long- and short-term negative impacts of all the alternatives proposed under Cedar Roughs.

4.4.9.3 Stornetta

Alternative D proposes burning 77 percent of the management area over a 35 year timeline. As discussed under 4.4.9.2, Cedar Roughs this could cause a shift in the vegetation composition of the management area to an undesirable state, especially in the costal prairie community. The effects of fire on *Viola adunca* are unknown leaving the chance that fire would negatively affect the plant. Alternative D has the greatest potential to have the negative long- and short-term impacts to vegetation communities and habitat.

4.4.9.4 Geysers

Under Alternative D, approximately 100 percent of the management area would receive prescribed burns over a 35 year period. The impacts would be similar as those described under 4.4.9.2, Cedar Roughs. Alternative D has the potential to have the most negative short- and long-term impacts to vegetation resources of all of the alternatives for the Geysers.

4.4.10 Impacts on Vegetation Management from Minerals

All alternatives allow for a majority of Ukiah lands to be available for both solid and fluid minerals leasing and mineral materials disposal. Solid resources may include precious metals extraction, gravel, sand, aggregate rock and decorative rock extraction (see Appendix G, Solid Minerals RFD). Fluid minerals include oil and gas extraction and geothermal energy production (see Appendix F, Oil and Gas RFD). Some alternatives allow for the withdrawal of lands from mineral leasing.

Alternative A (current situation) is the Preferred Alternative for mineral management decisions (fluid/leasable and solid minerals) in the entire planning area, except for Cache Creek, Cedar Roughs, and Stornetta (solid minerals). Alternative C is the Preferred Alternative for the Cache Creek and Cedar Roughs management areas (fluid/leasable and solid minerals), and Alternative B is the Preferred Alternative for solid minerals management decisions in Stornetta.

4.4.10.1 Common to All Management Areas

Determining the amount of future minerals extraction is speculative, at best. Precious metals, oil and gas, and rock extraction are dependant on market values, as is geothermal power production. Solid minerals extraction is anticipated to be minimal over the next 10-15 years with few likely precious metal mines, but potentially increasing demand for sand, gravel, aggregate and decorative rock quarries due to regional demand. Oil and gas resources within BLM administered land are extremely limited and it is anticipated that minimal activities (only 61 acres of disturbance) would occur during exploration and development of these resources (see Appendix D, Reasonable and Foreseeable Development (RFD) Scenario - Oil and Gas Resources.)

Geothermal resources are the most likely resource to be developed within and adjacent to BLM managed lands due to the demands for clean energy sources. Appendix F, RFD Scenario for Geothermal Resources, indicates future development would occur primarily in and around the Geysers area and within the Geysers - Calistoga Known Geothermal Resource Area. Additional limited development may occur on other BLM managed lands. It is anticipated that approximately 1,400 acres of land would be disturbed during exploration, well production, power plant and utility line construction.

As indicated above, lands which would be developed for minerals extraction would have the potential for short- or long-term minor to moderate negative impacts to vegetation, habitats and special status species due to direct impacts from vegetation removal during minerals exploration, and extraction and materials disposal.

Alternative A does not propose further lands to be withdrawn from minerals leasing beyond what is currently withdrawn. This would have negligible to major impacts to vegetation, habitats and special status plants due to the continued availability of sensitive habitats for minerals leasing.

Alternative B recommends the Cedars ACEC and Stornetta to be withdrawn from locatable mineral entry. Additionally, 34,000 acres within Cache Creek and 5,600 acres of the Cedar Roughs WSAs, and Stornetta would be closed to fluid minerals leasing. These increased acres of protected special status plant habitat and vegetation communities would be considered a long-term beneficial effect.

Alternatives C and D are the same and are cumulative to Alternative B, with the exception of the Cedars ACEC, which is not withdrawn from mineral exploration and extraction. The addition of the withdrawal of Black Forest and Cache Creek from locatable minerals entry is proposed. Fluid minerals leasing would also be withdrawn from the entire Cache Creek management area, and additional 750 acres at Cedar Roughs management area, the Black Forest, and 5,000 acres of the Cedars ACEC. These actions would be considered the most beneficial of all of the alternatives, as the most amount of sensitive habitats and community types would be unavailable from potential minerals exportation and development.

4.4.11 Impacts on Vegetation Management from Wind Energy

Because it does not depend on water for energy production, wind energy may overall, have few impacts to vegetation resources. Wind energy development within the region would occur along wind-prone areas such as ridgelines. The potential areas for development (see Appendix J, Wind Energy RFD) are Berryessa, Indian Valley/Walker Ridge, Knoxville, and Geysers. Impacts would include short and long-term vegetation disturbance from the development of the wind turbines, access roads, and transmission line construction. Areas closest to the electrical grid (i.e., Geysers) would have the fewest impacts associated with transmission line construction and maintenance. All alternatives are similar for all management areas.

Alternative B is the Preferred Alternative for wind energy management decisions in Cow Mountain, Cache Creek, Cedar Roughs, Stornetta, the Geysers, and the Scattered Tracts. Alternative D is the Preferred Alternative for the Knoxville, Indian Valley, and Berryessa management areas.

4.4.11.1 Common to All Management Areas

Alternative A allows for wind energy development to occur anywhere. Potential impacts to vegetation and special status species as a result of wind energy development would be minor direct short- to long-term negative impacts, primarily to chaparral communities, associated with wind turbine footings, access roads, and utility infrastructure such as transmission lines. NEPA analysis would be required prior to any development. Impacts to special status plant species would be analyzed more accurately during that process. Alternative B includes these areas as exclusion areas: Wilderness areas, WSAs, Cache Creek management area, Stornetta, Indian Valley, and Cedar Roughs management areas. These exclusion areas would reduce potential impacts especially to sensitive habitats and special status species. Alternative C contains fewer exclusion areas, which could result in potential minor long- and short-term impacts to special status plants. Alternative D is only slightly more restrictive than Alternative A. Alternative D could have minor to major negative impacts to vegetation and special status plant species. Alternative B would have the most beneficial long-term impacts to vegetation and special status plants.

4.4.12 Impacts on Vegetation Management from Travel Management and Route Designation

Travel management policies would continue to have both negative and positive impacts to vegetation, habitats and special status plant species. Negative impacts may be summarized as direct impacts to vegetation as a result of physically crushing plants, the introduction of non-native species which may out compete native vegetation, and the reduction of plant fitness by restricting photosynthesis due to excessive dust. For most plant species, these actions would not have an effect; however, in the case of special status species, these actions may impact a population. Positive impacts could result if travel

management policies direct vehicular or other traffic away from sensitive plant populations. Additionally, effective signing, road barriers or other physical enhancements may prevent future destruction of plants.

4.4.12.1 Cow Mountain

Cow Mountain has over 120 miles of designated roads and trails. Alternative A retains all currently open roads and trails. Alternative B closes and reclaims only 3.4 miles of road. Nearly 20 miles of currently closed roads will be reclaimed. Alternative C (Preferred Alternative) reduces then number of reclaimed road miles to just over 5 miles and opens the remainder (17 miles) to access primarily during deer hunting season. Alternative C closes no roads. Alternative D keeps the existing roads and a trails open, and proposes developing an additional 60 miles of roads and trails. There are fewer special status plant species which occupy Cow Mountain but impacts would occur to vegetation resources as a result of road/trail expansions. Alternative B would be the most beneficial to vegetation resources as it would allow for reestablishment of vegetation in previously developed roadways and trails. Alternative D would have the most negative direct and indirect long-term effects to vegetation resources because it would contribute to the loss of vegetation and potentially fragment habitat. Both Alternatives A and C would have negligible positive or negative impacts.

4.4.12.2 Knoxville

Knoxville has many miles of trails and roadways, with many being undesignated roads by the BLM. This network of old mining, hunting and trespass roads has recently undergone better management to connect some roads with dead-end roads and close routes to private property. Alternative A keeps these roads as they are. Alternative B would close and reclaim 12 miles of roads and trails. Alternative C (Preferred Alternative) would close and reclaim 6 miles but would allow for 1 mile of new trail to avoid the Northern Barrens area and up to 10 miles of additional trails could be built. Knoxville has numerous species and populations of special status plants. Alternatives that allow for road or trail closure as a means to avoid impacts to special status species would have a beneficial long-term effect. Both B and C allow for trail closures, which is overall beneficial to vegetation resources and would assist with avoiding impacts to special status plants. Alternative D proposes to develop up to 20 miles of new roads and trails and proposes to connect dead end trail. D would have moderate to major long-term negative effects to vegetation resources, especially to special status plants.

4.4.12.3 Indian Valley

Currently there are an estimated 19.5 miles of undesignated roads and trails. Locations of trails have not been mapped but it is assumed that some impact special status plant populations. Alternative A allows coordination with the Mendocino NF to develop a roadway plan. Although many of these illegal roads do not impact special status plants, current conditions allow for negative long-term impacts to vegetation and sensitive resources. A cooperative, functional plan that closes roads and trails where special status plants occur would have long-term beneficial effects to those resources. Alternative B (Preferred Alternative) would limit motorized use to the existing 19.5 miles of existing routes. This would result in a long-term positive impact to vegetation resources in Indian Valley.

4.4.12.4 Cache Creek

Cache Creek is adhering to the travel management plan within the CRMP developed in 2004, therefore no impacts are anticipated. The Cache Creek CRMP allows for trail development but does not specify number of miles of trail.

4.4.12.5 Cedar Roughs

Cedar Roughs has no designated developed trails or roads, although access occurs through CDFG, BOR, and private lands. Alternative A (Preferred Alternative) would continue current travel management actions and policies. Alternative B would close about two miles of existing jeep roads that do not have legal public access. Alternative C is similar to B but would allow for development of approximately 20 miles of roads and trails. Alternative D proposes to develop up to 50 miles of trail and road networks to allow more access. If the WSA area is designated wilderness, only foot trails would be constructed.

Alternative B would have the most beneficial long-term effects to vegetation resources. Developments of trails or roads are generally not beneficial for vegetation; however, trails may be designed to avoid sensitive resources by displacing users to a 'safer' location. Cedar Roughs has unique botanical resources and except for the small populations of special status plants at the northern tip of the area, the majority of these resources are not at risk of population decline. Limited tail access in the form of foot paths would not constitute a negative impact; rather it would likely be a negligible effect on vegetation. Given this scenario, Alternative C would have negligible long-term impacts to vegetation resources. However, if OHV trails are proposed, then the impacts would be negative long-term effects. Alternative D therefore could have minor to major direct long-term negative impacts depending on what type of access is planned.

4.4.12.6 Berryessa

The Berryessa area has no legal public access to BLM lands and only administrative access is granted. Alternative A (Preferred Alternative) would continue current travel management actions and policies at this area. Alternative B would remove and reclaim existing roads and fire breaks except the Berryessa Peak Road which gains access to the fire lookout and a communications tower. Alternatives C and D would acquire legal public access and allow non-motorized recreation on all existing roads and fire breaks. Mechanized travel would be limited to the Berryessa Peak Road. Additionally 30 and 40 miles (respectively) would potentially be developed as trails integrating existing fire breaks and jeep roads where possible.

Alternative B would be the most beneficial for vegetation resources as minimal human access is available and these resources would not have impacts associated with recreation or other activities. However, there are no known special status plant populations located on BLM managed land within the Berryessa area. Therefore, impacts associated with Alternatives C and D would have only minor short-term or negligible long-term negative effects to botanical resources within the Berryessa area.

4.4.12.7 Stornetta

Stornetta currently has little public access, that being closest to the beach areas and the Point Arena Lighthouse. Alternative A proposes the development of 15 miles of new trail. Impacts are dependant on

where the trail leads users. Impacts could range from negligible long-term to major long-term impact to vegetation, habitat and special status species. Alternative B would remove and restore interior roads within Stornetta. These could cause negligible short-term impacts to minor long-term impacts. Should cattle grazing continue at the Ranch, access via roads would be necessary for the ranchers and removal of roads could cause more damage to established vegetation. Alternative C (Preferred Alternative) would retain all roads and would propose developing 25 miles of new tails. These impacts would be similar to those under A and are dependant on placement of trail systems. Alternative D would propose vehicle access areas, retain existing roads, and develop up to 35 miles of new trails. This alternative would be the least beneficial for and would likely have major long-term impacts to vegetation resources, as D would allow the most amount of physical ground disturbance of all alternatives.

4.4.12.8 Geysers

The Geysers currently have little public access and most of it is limited to the deer hunting season. Access is granted for geothermal operations. Alternative A retains the current level of travel management. Alternative B proposes closing and reclaiming all existing roads. Alternative C (Preferred Alternative) would allow access year round. Alternative D would develop vehicular access locations for motorized and non-motorized use. Additionally, 35 miles of trails could be developed. Alternative B would be the most beneficial for vegetation resources, especially for special status plant species. Both C and D have the potential to have long-term minor to major impacts to vegetation resources by allowing access to areas which have not had access in the past. The potential for impacts to special status plant populations is increased under these alternatives.

4.4.12.9 Scattered Tracts

Parcels within the Scattered Tracts have little legal public access and access is generally by adjacent land owners. The Black Forest has a non-motorized trail and a non-public road for a utility access. Alternative A maintains existing management. Alternative B proposes to remove existing fire breaks and roads where feasible and within the Black Forest the non-motorized trail would be obliterated. Alternative C (Preferred Alternative) would attempt to gain legal public access to develop vehicular and non-motorized use. Additionally, 25 miles of new trails could be built. The Black Forest would have a developed trailhead with parking and have up to 20 miles of trails developed for motorized and non-motorized use. Alternative D is similar to C except more extensive trail and road use would be proposed.

Alternative A would have a negligible effect on vegetation, habitats and special status plants. Alternative B would have the most beneficial effect for these resources as access would be limited. However, removal of roads and existing trails may not stop use and further damage to vegetation could occur by unauthorized access by OHVs and non-motorized users. Alternative C could have long-term minor to major impacts to vegetation resources. D would be similar to C but would have more physical impacts.

4.4.13 Impacts on Vegetation Management from Recreation Resources

Recreation has the potential to become one of the single most widespread sources of impacts to vegetation resources. Human access within the Ukiah area is commonly by OHV (4WD, dirt bikes, quads), vehicle, pedestrian, bicycle (mountain bike), and horseback. All sources of human transportation and interactions for recreational activities (i.e., hunting, recreation, sightseeing, botanizing, bird watching) have the potential to affect vegetation, habitats and special status plant species by introducing noxious

weeds, physically crushing or destroying plants, and habitat modification. Current levels of recreation are changing yearly and management is necessary to curtail impacts to resources. The extent of current impacts to vegetation resources as a result of recreation activities in unknown, but it is likely impacts are occurring in some locations. Refer to Travel Management and Route Designation (see Section 4.4.14) for discussions on roads and trails.

The Alternatives presented are based on variations in the designation of recreation opportunity spectrum (ROS) zones such as: Backcountry, Middlecountry, Frontcountry, etc., with minor differences between the alternatives. As a general rule, those areas designated Primitive and Backcountry are the most protective of sensitive resources due to types of uses approved for this zone. Alternatively, Frontcountry and Middlecountry allow uses that may not be compatible with the protection of special status species and habitat. Selection of ROS zones do not coincide with the preservation of sensitive resources, and as such allowable recreation activities have the potential to impact special status plant species or habitat. Comparison of known locations of special status plants and ROS zones are presented below, however within some management areas the exact location of future recreation activities is unknown. Alternative A leaves the recreation types and management as they currently are and would likely have negligible to minor impacts on vegetation, habitats and special status plants except where noted.

4.4.13.1 Cow Mountain

Cow Mountain is divided into non-motorized and motorized areas, north and south respectively. Although some special status plants do exist in the southern portion of the management area, impacts are negligible. Alternative B is similar to A and would be the most beneficial to vegetation by allowing the closure of roads and unauthorized camps. If users do not adhere to the closures, direct moderate short-term and minor long-term impacts could occur. Alternative C (Preferred Alternative) is similar to B but allows for more development of facilities for camping, trailheads, trails or other user-friendly improvements. Alternative C could have minimal to minor direct negative impacts to vegetation, habitat and special status plants; however these impacts have the potential to be offset should the development direct users away from sensitive resources. Directing users may be in the form of signage, closing and re-routing trails, or by placing physical barriers to prevent access. Alternative D is similar to C and would have the same effects.

4.4.13.2 Knoxville

Knoxville has no designated backcountry therefore all types of use are allowed. All alternatives (Alternative A is the Preferred Alternative) are similar and all would have negligible to minor long-term impacts.

4.4.13.3 Indian Valley

Alternatives are similar to Knoxville and Indian Valley has no designated Backcountry (Alternative C is the Preferred Alternative). Impacts are similar to Knoxville; however a greater potential exists for minor long-term impacts to special status plants should development of trails or OHV use potentially impact these sensitive populations.

4.4.13.4 Cache Creek

Alternatives for Cache Creek are similar with minor exceptions. Alternative B allows mountain bike use in the Backcountry, Alternative C (Preferred Alternative) designates some Backcountry as Primitive, and D allows for greater range of uses including urban parks, shooting range, Americans with Disabilities Act (ADA) trails, and developed campgrounds. Alternative C would have the most beneficial long-term impacts for vegetation and special status species by limiting the types of uses. Although D would have major short-term direct impacts to vegetation resources, the long-term effects may be minor depending on the level and locations of the developments.

4.4.13.5 Cedar Roughs

Alternatives for Cedar Roughs differ in the allowable uses within the Frontcountry. Alternative B keeps the uses as designated (all uses), Alternative C (Preferred Alternative) eliminates motorized use, and Alternative D is similar to Alternative C but allows for developed trailheads. Alternative C would have the most long-term beneficial impacts for and vegetation resources; while D would have the same long-term beneficial impacts but would have minor short-term direct impacts. All other alternatives would have minor to negligible impacts to special status plants and habitat.

4.4.13.6 Berryessa

Alternatives and impacts are similar to Cedar Roughs (Alternative A is the Preferred Alternative) (see Section 4.4.13.5).

4.4.13.7 Stornetta

Stornetta is designated as Middlecountry and Frontcountry. Alternatives A and B do not allow motorized or mechanized use in the Front and Middle Country and allow all other uses for these designations. Alternative B proposes minimal trail development. Alternative C (Preferred Alternative) limits motorized use and proposes more trails and facility construction, and D is similar to C but provides for more facilities and trails. Alternative B would have the most beneficial long-term impacts due to limiting the types of use, yet still limit facility construction and depending on the extent and locations of the proposed trail systems, impacts could be minor direct short-term and minor long-term effects to vegetation resources, habitats and special status species. Alternative C could have similar effects but allows for more facilities, trails and types of uses, which depending on the extent and location, could have more negative impacts to special status species and habitat. Alternative D would likely have more impacts than Alternative C.

4.4.13.8 Geysers

Alternatives differ slightly but Alternative C (Preferred Alternative) would be the most beneficial for special status plant populations by limiting the types of uses and developing limited access.

4.4.13.9 Scattered Tracts

All alternatives differ slightly but Alternative C (Preferred Alternative) would be the most beneficial for the Black Forest by limiting types of uses and access.

4.4.14 Impacts on Vegetation Management from Soil Resources

The goals and objectives set for maintaining soil resources are inherently suitable for protection of vegetation resources. Prevention of erosion, compaction, and sediment transport allows for a more stable medium for vegetation, specifically for special status plants and habitats. Managing users within areas of serpentine soils would directly benefit rare plants within these unique geologic resources. Actions regarding soil resources would result in positive impacts for vegetation resources. Alternative C is the Preferred Alternative for vegetation management decisions in the planning area.

4.4.15 Impacts on Vegetation Management from Water Resources

Improving, restoring and preserving water resources through enhancements to riparian and wetland environments, would directly benefit vegetation, habitats and special status plant species and would result in positive impacts to these resources. Alternative C is the Preferred Alternative for water resources decisions in the planning area.

4.4.16 Potential Cumulative Impacts to Vegetation Management

Ukiah's lands are surrounded by the ever expanding population of California. Pressures for extraction of resources, infrastructure expansion, energy supply, urban and rural expansion, and the public's need to recreate see no end. The purpose of the RMP is to allow for management to periodically address the needs of the present and future pressures placed on public lands. Cumulative impacts can range from large subdivisions, highway or road expansions, energy development, landfill locations, urban interface wildfire protection, and other community needs adjacent to public lands. These concurrent with the allowable uses discussed in this document can have major impacts on vegetation, habitats and special status plants.

4.5 IMPACTS ON SOCIAL AND ECONOMIC CONDITIONS

Impacts to social and economic conditions in the planning area could result from a wide range of management actions included in the RMP alternatives. In addition, many different types of social and economic resources could be affected, as described in Section 3.8, Cultural and Socioeconomic Environment. This impact assessment focuses on those economic resources and social values that would be most affected by proposed management actions and policy direction outlined in the RMP alternatives. These include: direct and indirect employment (job) and income effects on affected businesses and individuals working in the local and regional economy, effects on the fiscal resources of local governments, and changes in the demand for local public services (e.g., law enforcement, fire protection and emergency services, and road maintenance). Effects on the social environment were also considered and include potential effects on lifestyles, sense of place, community values, and possibly, unfair or unjust impacts or burdens on minority and low-income populations (i.e., environmental justice).

The analysis presented in this section is intended to capture community and regional level impacts and is not organized by management area. Much of the analysis presented in this section is qualitative based on the programmatic nature of the proposed RMP. Local economic impacts are driven primarily by the costs associated with implementing the range of management actions in the RMP, which generally have not been estimated at this time. Where data are available, potential economic impacts are quantified based on existing market conditions.

This section also addresses how the RMP alternatives may affect minority and low-income populations. Executive Order 12898 requires each federal agency to seek to achieve environmental justice by "identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies or activities on minority and low-income populations."

While none of the RMP alternatives are expected to cause major adverse and disproportionate effects to minority or low-income populations, some of the different types of resource management actions under consideration could affect such populations in a positive or negative manner as summarized in the following sections.

4.5.1 Impacts on Social and Economic Conditions from Visual Resource Management

Protecting and enhancing the scenic quality of lands in the planning area is an important management consideration for the Ukiah Field Office. The primary tool used by BLM to manage scenic quality and visual resources is the VRM classification system. VRM classifications have been applied to only certain management areas under existing conditions. Existing VRM classifications would be updated and new classifications applied to unclassified areas under all of the action alternatives, which would help ensure that proposed management activities, development allowed on BLM-administered lands, or other changes in the scenic landscape are in conformance with the assigned VRM classes for a particular area. Therefore, the overall level of visual quality anticipated under the Proposed RMP is dependent on the range of proposed VRM classifications across alternatives and management areas.

By improving and preserving the scenic quality of the region, implementation of the new and updated VRM classifications under all of the action alternatives would continue to provide minor, long-term socioeconomic benefits to local residents and visitors alike. From an economic perspective, maintaining the scenic quality of the region via the protection of open space resources would continue to represent an important local amenity, which would likely have a positive effect on property values. In other words, there is a premium paid by property owners for living in close proximity to open space resources and/or areas with aesthetically pleasing views. Not only do enhanced property values directly benefit local property owners, they may also benefit the fiscal resource conditions of local jurisdictions based on relatively higher assessed property values and related property tax revenues. The proposed management of visual resources is not expected to lead to direct employment, income, or public service effects under any of the alternatives. However, the preservation or enhancement of scenic viewsheds could indirectly benefit the local economy by maintaining or improving the quality of local recreation opportunities, which may result in increased visitation levels and related socioeconomic effects as described in Section 4.5.13 below.

In addition, protection and enhancement of visual resources can benefit the local social environment. Many residents of the Ukiah planning area, as well as many visiting recreationists, identify with the rugged landscapes and open vistas available on public lands, and are likely to experience a minor to moderate, positive impact from the continued protection of unobstructed views.

Of the three action alternatives, the level of visual resource protection and related socioeconomic benefits would be generally the highest under Alternative B (Preferred Alternative for Cow Mountain, Knoxville, Cedar Roughs, and Stornetta), followed by Alternative C (Preferred Alternative for Indian Valley, Cache Creek, Berryessa, the Geysers, and Scattered Tracts), and Alternative D. (Under

Alternative A, the application of the VRM system is not uniform across management areas, and therefore not directly comparable to the other alternatives.)

Similar to other population groups in the planning area, minority and low-income populations benefit from the preservation of scenic vistas and associated open space. Low-income and minority property owners would benefit indirectly from continued protection or enhancements of visual resources as such management actions typically help protect or increase property values over time. Low-income and minority populations also would benefit by related positive effects on local property tax revenues, the fiscal resources affected by changes in tax revenue, and the local agency public services that are funded by such revenues. Local residents of all types also place a high value on being able to recreate on or near the BLM lands being managed by the Ukiah District. Local ranch employees, farm workers and others appreciate the ability to recreate and relax on BLM lands, and as confirmed by the interviews summarized in Section 3.8.6.4, look forward to "getting away from it all" when the visit BLM lands. Thus, continued or enhanced protection of scenic vistas and associated open spaces would also help improve the quality of recreation for those minority and low-income populations who choose to recreate in the planning area. These positive effects would be generally the highest under Alternative B, followed by Alternative C and Alternative D.

4.5.2 Impacts on Social and Economic Conditions from Wildlife and Fish Management

The potential socioeconomic impacts associated with wildlife and fish management are based on the type and amount of expenditures made locally to implement the various actions and programs focused on these resources. (This also applies to vegetation management – see Section 4.3.7 – and management of riparian and wetland resources – see Section 4.4.8.) Representative projects referenced in the proposed RMP alternatives that could induce local spending include habitat restoration and enhancement efforts, such as prescribed burning and site monitoring activities. These projects could be implemented by BLM directly or involve funding of local conservation groups or other public agencies. Historically, BLM has spent roughly $75,000 per year on wildlife and fish management efforts, which has resulted in direct and indirect economic benefits.

Under Alternative A, the existing level of wildlife and fish management efforts would continue into the future, as would the related economic benefits generated under existing conditions, which are considered to be minor. Under the action alternatives, the level and intensity of wildlife/fish management efforts increases from Alternative B (Preferred Alternative for Cache Creek) to C (Preferred Alternative for all other management areas) to D. Although none of these alternatives include wildlife management prescriptions that explicitly involve funding of local conservation groups or reference dollar costs associated with management actions, it is assumed that the level of local spending would increase as one moves across the spectrum of alternatives, with all of the action alternatives having a greater level of expenditures relative to Alternative A. To the extent that the funds required to implement these activities are spent locally and/or used to fund local conservation groups over the life of the plan, there would be a long-term, minor, and beneficial impact to the local economy. Such impacts would include temporary increases in income and employment realized by individuals and organizations involved in implementation actions. Indirectly, this increase in income and associated spending by affected individuals and organizations would in turn result in negligible, but positive, impacts to fiscal resources (i.e., state and local sales tax revenues and state and federal income tax revenues). In addition, wildlife and fish management strategies that would improve the quantity and quality of these resources may

attract more recreationists to the region, which would indirectly result in the types of recreation-based economic/fiscal benefits described in Section 4.5.13.

Individuals engaged in hunting and fishing activities, and those involved in related support or advocacy organizations, could experience a minor to moderate, positive social impact from improved protections for wildlife and fisheries resources. Many people base part of their sense of personal identity in being a hunter or a fisherman, and greatly value opportunities to continue these resource uses on public land. Others may experience a minor to moderate, positive social impact from the "existence value" of healthier wildlife and fish populations.

Improving the management of fish and wildlife species and their habitat could directly benefit minority and low-income populations if related habitat improvement, species monitoring or other types of activities result in new employment opportunities for such populations. Such populations would also benefit from the minor increases in economic activity including additional tax revenues for public service agencies. While the BLM has minimal influence over the minority hiring policies of the private and non-profit organizations who assist with wildlife and fishery management activities, the BLM, CDFG and other federal, state, and local agencies do have policies that could help ensure that some of the new jobs would be filled by minorities. The level and intensity of wildlife and fish management efforts, and related prospects for enhanced spending and related employment opportunities, increases from Alternative B to C to D and all of these alternatives would likely lead to greater spending than that associated with Alternative A. As noted under the recreation management sub-section below, minority and low-income populations also could benefit from improved hunting and fishing opportunities that would result from an increase in fish and wildlife populations.

4.5.3 Impacts on Social and Economic Conditions from Vegetation Management

Alternative approaches to vegetation management include different levels of prescribed burning and various methods for eradicating or reducing exotic or noxious weeds. The level and intensity of vegetation management efforts are relatively the same under Alternatives A and B, with greater levels of management efforts occurring under Alternatives C (Preferred Alternative for all management areas) and D. Based on the potential to generate localized spending and establish funding for local groups and other public agencies to carry out these management practices, all of the alternatives would generate some level of local economic activity, thus leading to the same type of minor, yet positive, economic impacts summarized above in Section 4.5.6 (Wildlife and Fish). It is expected that greatest amount of economic benefits would occur under Alternative D, followed by Alternative C, and Alternatives A and B. However, relative to existing and future No Action conditions under Alternative A, which already include programs to help manage vegetation, only Alternatives C and D would result in new socioeconomic benefits.

Individuals with a passion for vegetation-related issues, such as members of the California Native Plant Society, or those who in general value healthier, more natural ecosystems, could also experience a minor to moderate, positive impact from the vegetation management alternatives, moreso for Alternatives C and D than for A and B.

Similar to fish and wildlife management activities, additional prescribed burning and new activities intended to help control exotic or noxious weeds have the potential to increase employment

opportunities for minority and low-income populations and could increase local economic activity. The level and intensity of vegetation management efforts and related spending would be relatively the same under Alternatives A and B, with greater levels of management efforts likely to occur under Alternatives C and D. If minorities or people with low incomes fill positions that require the use of chemicals to control weeds, or prescribed burning, they could be exposed to an increase in some health risks; however, standard Best Management Practices would be followed, which would minimize the risk of accidents and being exposed to hazardous materials. Also, any increase in health risks for minority and low-income populations would not be disproportionate to those experienced by other types of population groups.

4.5.4 Impacts on Social and Economic Conditions from Riparian and Wetland Habitats

The objective of the proposed management approach for riparian and wetland resources focuses on rehabilitation and restoration activities. Under Alternatives A and B, passive management (i.e., allowing natural processes to occur) would be the primary approach to addressing the long-term health of these resources; however, Alternative A also allows for active management as disturbances arise, including coordination with local watershed groups. Alternatives C (Preferred Alternative for all management areas) and D represent more proactive management of resources, with projects being implemented and collaboration with local groups and organizations. In addition, Alternative D also includes baseline data collection and field monitoring. Based on their potential to generate local spending and establish funding for local groups and organizations to implement proposed management activities, only Alternatives C and D have the potential to generate an increase in local economic activity relative to future No Action conditions under Alternative A; this would result in the same type of minor, yet positive, economic impacts summarized above in Section 4.5.6. The greatest amount of economic benefit is expected to occur under Alternative D because it represents the most active management of riparian and wetland resources. Because Alternatives A and B rely on passive management of riparian and wetland resources, little or no new economic or social effects are expected with these alternatives.

Proactive riparian and wetland habitat management would lead to the same type of beneficial economic and social impacts and opportunities as described above for vegetation and fish and wildlife management. The greatest amount of benefit is expected to occur under Alternative D because it would involve the most active management of riparian and wetland resources. Because Alternatives A and B rely on passive management of riparian and wetland resources, very few or no new effects on minority or low-income populations would occur under these alternatives.

4.5.5 Impacts on Social and Economic Conditions from Cultural Resources

Management of cultural and historic resources by the BLM generally has a negligible effect on regional economic conditions. Potential economic impacts arise from expenditures required for site evaluations and monitoring activities, while management directives for law enforcement could affect public services. Under Alternative A, there would be no change to existing levels of cultural and historic resource management, which includes site monitoring activities, law enforcement patrols, consultation with Native Americans, and various research and public education efforts. As a result, there would continue to be very minor economic and negligible public service impacts generated from future management activities. However, there would likely be a continuation of the minor, beneficial social impact to people who personally identify with the cultures and/or history represented by these types of resources.

Under Alternatives B, C (Preferred Alternative for all management areas) and D, there would be more active management of cultural resources relative to future No Action conditions under Alternative A, including increased site monitoring and law enforcement patrols (Alternative B) and greater levels of site documentation/reporting and implementation of stabilization projects (Alternatives C and D). To the extent that the proposed management strategies induce spending in the local economy, localized economic benefits in the form of jobs and income would be generated; these effects are expected to be minor across all of the action alternatives. Policies aimed at increasing law enforcement patrols and monitoring under Alternative B have the potential to place additional demand on local agency staff resources; however, because BLM staff would be responsible for meeting future monitoring and site patrol needs throughout the planning area, there would be no additional demands placed on local agencies for these services, and no impact would occur.

Cultural resource management activities have the potential to cause or help avoid major social effects to Native Americans and their traditional cultural practices. This is why the BLM is planning to carry out a number of related and beneficial activities that are common to each of the RMP alternatives, including: additional coordination and consultation with Native Americans in the planning area, increased protection for traditional cultural resources and sites, and more inventories, monitoring, law enforcement and educational activities. Many of these activities are expected to reduce vandalism to resources important to Native Americans and impacts from various types of resource uses, including OHV use, grazing and the development of energy projects. Relative to Alternative A, Alternative B would include the implementation of additional protective measures in special management areas while Alternatives C and D would both lead to more protective measures than A or B. All of the cultural resource actions under these alternatives would help avoid major and adverse effects to Native Americans, and an increase in cultural resource inventories, monitoring and law enforcement patrols could result in additional employment opportunities and other economic benefits for minority and low-income populations.

4.5.6 Impacts on Social and Economic Conditions from Lands and Realty Management

Potential impact on social and economic conditions from lands and realty management actions are based on future land use authorizations (via granting of right-of-way on BLM lands) and changes in land tenure. Both of these types of management actions could affect the type and extent of future land uses in the planning area, which have a direct effect on local economic activity. Further, changes in land tenure could affect fiscal resource conditions by changing the amount of property tax payments and payments-in-lieu-of-taxes (PILT) collected by local counties.

Under all alternatives (Alternative C is the Preferred Alternative for all management areas, except the Scattered Tracts, which is Alternative B), the management direction regarding land tenure is to: (1) retain public lands that enhance multiple use and protect significant resource values; (2) dispose of lands to support local community and development needs; (3) dispose or transfer land and mineral estates that are difficult or uneconomic to manage; and (4) acquire lands to complement existing resource values. Further, acquisition of lands throughout the planning area would continue under a "willing-seller" policy under all alternatives. If properties are disposed of and transferred into private ownership, local property tax rolls would expand and there would be an associated increase in property tax revenues collected by local counties. (It is assumed the increase in property tax revenue would be greater than the loss of PILT payments received by these jurisdictions since Congress has historically funded the account used to make PILT payments at levels that local governments claim do not fully replace foregone property tax

revenue.) This is considered a potentially minor to moderate and long-term fiscal benefit to affected counties in the planning area depending on the amount of land subject to disposal. Conversely, if private properties are acquired by the BLM, thereby removing them from county property tax rolls, such lands and realty management actions have the potential to negatively affect county revenues if future PILT payments are lower than foregone future property tax revenues associated with the acquired land. The magnitude of such impacts can vary widely and are difficult to estimate given the significant uncertainty that often surrounds how, if, or when an undeveloped parcel may be developed in the future. Any adverse fiscal impacts associated with property acquisitions may also be offset to some degree by property tax revenue increases as property values near publicly-owned open space areas increase over time. Overall, property acquisition still represents a potentially minor to moderate, long-term, and adverse impact to the fiscal resources of local county governments.

The net fiscal effect of future changes in land tenure across plan alternatives cannot be readily estimated because the quantity of lands subject to land tenure adjustments is unknown. Generally, however, all alternatives would likely result in a net increase in public land holdings over time since land disposal would occur across the Scattered Tracts only and land acquisition is allowed at all of the other management areas. This would result in the adverse fiscal effects described above.

Some local minor social impacts could occur as less rural private land would be available for home site development in the immediate vicinity of acquisition areas. Local land trusts and other collaborative organizations could also experience a minor to moderate, long-term, adverse impact if BLM's flexibility in land acquisition is limited. Conversely, these organizations could experience a minor to moderate, long-term, positive impact if the BLM's lands and realty program is better coordinated with their own goals for protection of lands within the planning region.

In addition, lands and realty practices may affect the quantity, location, and type of future land use authorizations granted via ROWs within the planning area, which can generate a range of socioeconomic effects. Some of these future land uses, including renewable energy development and mineral extraction and use, are discussed in their respective sections below. However, there are other potential uses allowed in ROW, such as communication sites, which could have minor effects on local socioeconomic conditions. Yet, because it is too speculative to forecast the type and extent of future land uses that would occur with plan implementation, the related socioeconomic effects are unknown.

Lands and realty management actions have the potential to affect minority and low-income populations by changing the amount of property tax revenue or PILT payments received by the public agencies that provide public services to such populations. This type of management activity can also influence the amount of land development that occurs in the planning area, and thus the amount of economic activity and associated employment opportunities. While the amount and locations of land ownership adjustments associated with the RMP alternatives are for the most part not known at this time, it is likely there would be a general increase in the planning area's overall public land holdings over time in the planning area with the exception of likely land disposals in the Scattered Tracts areas. An overall increase in public land holdings would result in minor but adverse fiscal effects as property tax and PILT payment revenues decline, and economic activity and associated sales and income tax revenues decrease in areas that could be developed if they remain in private ownership. On the other hand, if additional land disposals and associated economic development does occur in the Scattered Tracts areas, this would

increase local economic activity and employment opportunities for some minority and low-income populations.

4.5.7 Impacts on Social and Economic Conditions from Special Designations

Socioeconomic impacts associated with special designations in the planning area are based on potential changes in the economic opportunities provided by affected public lands and changes in local property values, as well as potential social impacts on those residents and users who are involved with land protection organizations advocating changes in designations. Special designations proposed in the planning area include WSAs and ACECs.

From an economic perspective, if there are areas that currently or are expected to generate economic activity based on allowable uses (e.g., mining, certain types of recreation activity like OHV use, etc.) that would no longer support such activity in the future due to special designations, there would be a related loss in economic benefits. Under Alternative A (Preferred Alternative for Berryessa and the Geysers), there would be no additional WSAs/ACECs designated in the planning area; therefore, there would be no new socioeconomic impacts under this alternative. Under the three action alternatives, there would be additional lands identified as WSAs and ACECs in the planning area. Under Alternatives B (Preferred Alternative for Cedar Roughs), C (Preferred Alternative for all other management areas), and D, an additional 6,085, 21,600 and 73,415 acres of public land would be subject to special designations, respectively. Accordingly, it is plausible that the greatest amount of foregone economic activity would occur under Alternative D, followed by Alternative C and Alternative B. To the extent that economic activity is currently generated on these lands, special designations would result in minor to moderate, long-term, adverse economic impacts.

From a fiscal perspective, applying special designations on public lands would formally identify these areas as protected open space for the foreseeable future, which would likely generate amenity values to nearby private properties. If this value is captured during property tax assessments, there is the potential for an increase in property tax revenues collected by local counties. This is considered a minor, long-term, and beneficial impact to the fiscal resources of local counties, with the greatest benefits occurring under Alternative D, followed by Alternatives C and B.

Socially, many people hold very strong ideas about land designations, particularly wilderness; some wish to see as much land as possible protected by special designations to promote wilderness characteristics, others feel these designations unfairly "lock up" public lands from a variety of uses. Because such a wide variety of opinions exist as to whether increased special designations represent a beneficial or adverse impact, it is impossible to determine the precise social impact of these alternatives; for people who value special designations, Alternative D would result in a larger positive impact than the other alternatives, while people who prefer fewer designations would gain more positive impact from Alternative A.

Similar to land acquisitions, the designation of new management areas such as ACECs and WSAs, have the potential to reduce the amount of resource development projects on BLM lands, but only if the development of mining, grazing or energy projects is likely in the areas where management status changes. The greatest amount of potential foregone economic activity would occur under Alternative D, followed by Alternative C and Alternative B. New special designations could reduce employment

opportunities for minority or low-income populations if development projects are precluded, while such designations could improve recreation opportunities for such populations.

4.5.8 Impacts on Social and Economic Conditions from Forest Management

The proposed approach to forest management in the RMP focuses on the protection and enhancement of recreational and biological resources rather than timber production. No commercial harvesting of timber or wood specialty products would be allowed under any of the alternatives. As a result, most of the market value of commodities on BLM lands, estimated at over $600,000 for timber, would not be realized under any of the alternatives. However, the restrictions on forest-based commodity production included under all of the alternatives do not represent a change from current management conditions, and instead, represent a continuation of existing forest practices on BLM lands in the planning area. As a result, there would be no economic or social impacts relative to existing and future No Action conditions under any of the alternatives (Alternative A is the Preferred Alternative).

Since the RMP alternatives would continue existing forest management practices, no new impacts to minority or low-income populations are expected.

4.5.9 Impacts on Social and Economic Conditions from Livestock Grazing Management

Grazing management policies vary considerably across management areas in the RMP alternatives. Changes in grazing policy would primarily affect the areas available for livestock grazing, as well as the timing and purpose of grazing activity. From an economic perspective, changes in grazing policy could affect the level of grazing activity in the planning area (as measured by AUMs), which would, in turn, affect the level of economic activity generated by grazing practices. This includes direct spending by ranchers in the local economy to support grazing operations, revenues earned by local ranching operations through commodity sales, and the associated effects on income and jobs in the ranching industry and the economy as a whole. Based on the RMP alternatives, and as described further in Livestock Grazing Management (see Section 2.11), the existing and projected number of total AUMs at the planning horizon period (2030) is estimated as follows[1]:

- Existing conditions: 2,268 AUMs
- Alternative A (Preferred Alternative for Cow Mountain, Cache Creek, and the Geysers): 668 to 2,268 AUMs (decrease of 1,600 to 0 AUMs)
- Alternative B: 0 to 1,600 AUMs (decrease of 2,268 to 668 AUMs)
- Alternative C (Preferred Alternative for Knoxville, Indian Valley, Cedar Roughs, Berryessa, Stornetta, and Scattered Tracts): 665 to 2,265 AUMs (decrease of 1,603 to 3 AUMs)
- Alternative D: minimum of 2,661 AUMs (increase of 393 AUMs)

Alternative A would continue existing grazing policies in the planning area in the short-term, and therefore, the existing positive economic and social impacts associated with cattle ranching in the

[1] There is the potential for the loss of 1,600 AUMs at Stornetta after year 2014 when the existing lease expires and the property is assessed for grazing potential. This applies to Alternatives A, B and C only, and is analyzed separately below.

planning area would continue[2]. This includes the generation of revenues by local ranching operations (approximately $180,000 annually), most of which is spent in the local economy to cover grazing-related operating costs (about $174,000 annually). These benefits also include operating and labor income earned by ranchers totaling roughly $61,000 annually. (Note: net profits of local ranching operations, which consider fixed ownership costs, are likely to remain negative.) Short-term employment and income effects generated by grazing in the planning area, including the direct jobs to ranchers and hired employees and secondary economic effects as money is circulated through the local and regional economies, would also continue under this alternative, as would related fiscal benefits.

Of the three action alternatives, Alternative B could result in the greatest reduction in AUMs, eliminating all grazing activity outside of the Stornetta property. This represents a loss of 668 AUMs in the planning area. Consequently, the direct and indirect income, jobs, and sales/income tax effects that were attributed to these grazing allotments would be completely lost. Based on the estimated economic value of cattle grazing in the North Coast region, approximately $53,000 would be lost in annual revenues earned by local ranchers and roughly $51,200 would be lost in annual expenditures that are circulated through the local economy (primarily in the agricultural services sector), which would also indirectly result in a reduction in secondary income and employment benefits. Employment and related earnings directly generated by local ranching operations would also be lost assuming that affected ranchers do not have readily available grazing alternatives with comparable costs. Overall, elimination of cattle grazing under Alternative B would be a major, long-term and adverse impact, although quite localized, on the affected ranching businesses, their owners and employees. However, when evaluated from a regional perspective, in the context of the income/job base in the counties that comprise the planning area, this would be a negligible adverse impact. Yet, while the economic impact of vegetation management may be negligible, the cultural impact of eliminating grazing would be negative, particularly for those people in the area who value continued agricultural use of the land and the generations-old tradition of keeping cattle on the ranch.

Alternative C would have little or no effect on the level of grazing in the planning area (outside of the Stornetta property). The potential increase in AUMs at Cow Mountain could be offset from grazing reduction in the Berryessa area. As a result, the net economic effects of this alternative would be similar to those describe above under Alternative A.

The only alternative that would result in an increase in grazing is Alternative D. Additional grazing allotments could be established under this alternative, which could result in an additional 393 AUMs (based on historic grazing allotment figures); this figure could be higher based on the amount of forage available after wildfire that is available for short-term grazing. Based on this estimate and the representative grazing revenues/costs used in this analysis, approximately an additional $31,200 would be earned by local ranchers in annual revenues, and local spending on ranching-related goods and services would increase by roughly $30,100, indirectly resulting in a secondary income and employment benefits. Increasing grazing activity would also generate direct job/earnings benefits for local ranching operations. Overall, an increase in cattle grazing under Alternative D would be a moderate, long-term beneficial economic impact at the local level.

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[2] The estimates of economic activity generated by local ranching operation on BLM lands in the planning area are based on typical enterprise budgets for the region developed by U.C. Cooperative Extension (as presented in the Affected Environment section). Actual operating cost data, which are considered proprietary, were not used.

In all of the RMP alternatives except Alternative D, the status of future grazing activity (beyond 2014) at Stornetta is unknown. If grazing is eliminated after 2014, there would be an associated adverse economic impact in the local area based on the loss of 1,600 AUMs. It is estimated that the loss of grazing activity at Stornetta would result in a loss of about $126,900 in annual revenues and roughly $122,700 in annual expenditures in the local economy. The types of secondary economic, fiscal, and social effects would be similar to those described above. Potential grazing-related economic effects in the long-term at the Stornetta property should be considered in conjunction with the pre-2014 effects described above for Alternatives A, B, and C.

Changes in livestock grazing management have the potential to affect both minority and low-income populations in a number of ways. The Hispanics, Basques, Native Americans and other minorities that often work at cattle ranches, along with low-income and ethnically diverse "ranch hands," depend upon public lands-related cattle ranching for not only their incomes and livelihoods, but also have strong cultural ties to ranching. The ranching lifestyle is important to local communities of place and their residents as many aspects of their lives, including their work and social lifestyles, revolve around and depend upon ranching and in many cases grazing access to public lands. The range of grazing management changes anticipated in the RMP alternatives would likely lead to the potential changes in AUMs and related economic effects summarized in Section 4.5.9. These changes in grazing and economic effects would in turn increase or decrease employment opportunities or the incomes of minority and low-income populations. They would also affect the tax revenues of those public agencies that provide public services to such populations. Given the importance of cattle ranching from a cultural perspective, reductions or increases in grazing would also cause adverse or beneficial lifestyle, perceptions and other types of social impacts. All of these types of potential impacts would likely be major, adverse and long-term under Alternatives A, B and C, with the largest reduction in AUMs expected under Alternative B. These adverse impacts on minority and low-income populations could be disproportionate if such populations make up a large percentage of the employees affected at the cattle ranches affected by the potential changes in grazing management. The types of impacts summarized above would be positive under Alternative D as it is the only alternative that would lead to an increase in grazing and AUM production.

4.5.10 Impacts on Social and Economic Conditions from Fire Management

A FMP would be developed and maintained under all of the RMP alternatives. The socioeconomic effects of fire management strategies are based primarily on wildfire suppression activities that are intended to protect public safety, property and resource values, and proactive fuel management techniques. Such effects would reduce the risk of large-scale fire events and are expected to induce more frequent, but smaller, expenditures in the local economy compared to much less frequent, but perhaps greater expenditures that could be needed to respond to larger fire events if fuel loads are allowed to increase substantially over time. With respect to fire management, the only distinction between the RMP alternatives is the amount of land subject to prescribed burning.

Under all of the RMP alternatives (Alternative C is the Preferred Alternative for all management areas), the objective of BLM would be to provide an appropriate management response on all wildland fires. As part of this effort, the BLM would continue to work with CDF, which provides fire protection services

under the existing cooperative agreement between these agencies[3]. As a result, there would continue to be a demand placed on CDF resources for fire protection services, which could potentially result in adverse fiscal impacts to CDF if the future demand for fire-fighting services cannot be met by current staffing levels and budgets. In contrast, continued demand for future fire suppression services performed by CDF would also lead to a continuation of beneficial income and employment impacts for paid fire fighters. And finally, although it is BLM's goal to provide adequate wildfire response, the risk and extent of future fire events cannot be predicted at this time, and therefore, the related economic effects, including potential property damages, are unknown.

There is also a range of management actions related to wildfire suppression common to all alternatives that could affect economic resources. These include prioritizing fires based on values to be protected commensurate with cost; identifying communities-at-risk within each FMU; and limiting the intensity of fire suppression efforts to the most economical response consistent with human and resource values at risk. These features would help focus fire suppression activities in a manner that protects the highest valued resources at least cost (i.e., would be economically efficient).

All of the alternatives include some level of fuel load reduction measures, which consist primarily of prescribed burning and mechanical treatments. Fuel load management would potentially provide long-term economic benefits associated with the reduced risk of large-scale fires that could damage personal property, particularly homes near wildland-urban interface areas. In the short-term, however, there may be additional demand placed on CDF and BLM resources during prescribed burn events. Fuel load management activities would also generate local spending on goods/services needed to implement these activities, resulting in minor direct and indirect economic/fiscal benefits (e.g., jobs, income, and sales and income taxes) in the communities in which purchases are made. Mechanical treatments could possibly produce some economic byproducts, such as firewood or biomass for energy projects, but the quantity is not likely to be large enough to generate much impact.

Because Alternative A would continue to implement the existing level of fuel load reduction across the various management areas, it would not lead to any new socioeconomic impacts. Under Alternative B, there is the potential for less prescribed burning relative to Alternative A, and as a result, there is a slightly higher probability of large-scale fire events and related damages, less frequent demand on CDF resources, and less frequent localized spending; based on the difference in acreage subject to fuel load management activities, these effects are considered negligible long-term socioeconomic impacts of Alternative B. Fuel load management under the other two action alternatives are more intense relative to existing conditions, with Alternative D allowing for the greatest amount of prescribed burning of any of the RMP alternatives. Therefore, these alternatives have the potential to result in less frequent wildfire events due to lower fuel loads, more frequent demands on CDF resources during prescribed burn events, and an increase in spending for prescribed-burn related goods and services. These effects would generate moderate economic benefits and minor adverse public service impacts under Alternatives C and D.

The types of potential impacts on minority and low-income populations associated with changes in fire management, are very similar to those described above for changes in fish and wildlife and vegetation management. These potential positive and negative effects are relatively minor and would be most likely to occur under the RMP alternative with the most prescribed burning, Alternative D; while Alternative B

[3] Note that BLM provides fire protection services to CDF in other parts of the state under this agreement.

would likely reduce the likelihood of such impacts since it would lead to less prescribed burning.

A unique potential impact associated with changes in fire management actions could occur if more proactive fire and fuels management leads to a lower risk of wildfire for local communities. Since many residents in remote, rural communities near or adjacent to BLM lands are low-income, and to a lesser extent may belong to a minority population, such populations stand to benefit if more proactive fire management reduces the risk of damage to their property or rental housing. As noted above, Alternative D has the most prescribed burning and would thus likely lead to the greatest reduction in the risk of wildfires, while Alternative B could increase the risk of wildfire by reducing the amount of prescribed burning. Alternative C would increase prescribed burning but not as much as Alternative D.

4.5.11 Impacts on Social and Economic Conditions from Minerals

The analysis of socioeconomic impacts from minerals management in the planning area is organized into solid minerals and fluid minerals. Solid minerals are further categorized into locatable minerals (e.g., precious metals, such as gold) and saleable minerals (e.g., construction materials, such as gravel and sand). The three types of fluid minerals considered here are oil, natural gas, and geothermal resources. The socioeconomic effects of minerals management are based on the potential for mineral extraction and use under the various RMP alternatives and the existing market value[4] of mineral commodities. Estimates of the level and type of mineral extraction activity under future No Action conditions (Alternative A) are based on the RFDs for solid minerals, oil and gas, and geothermal resources that were prepared by BLM staff as part of this RMP planning effort (see Appendices G, F, and H, respectively). The RFDs are based on known or inferred mineral resource capabilities on BLM lands in the planning area.

Alternative A (current situation) is the Preferred Alternative for mineral management decisions (fluid/leasable and solid minerals) in the entire planning area, except for Cache Creek, Cedar Roughs, and Stornetta (solid minerals). Alternative C is the Preferred Alternative for the Cache Creek and Cedar Roughs management areas (fluid/leasable and solid minerals), and Alternative B is the Preferred Alternative for solid minerals management decisions in Stornetta.

Solid Minerals – Locatable Minerals

In terms of locatable mineral resources, the major commodities of interest over the next 15 to 20 years are expected to be gold, silver, and mercury. Future interest and potential prospecting, exploration, and mining of these minerals will be driven by the relationship between production costs and the market price of the commodity, which are difficult to forecast.

Under Alternative A, the Ukiah planning area is generally available for locatable mineral entry except as noted in the existing withdrawals; no new withdrawals would be proposed. Although locatable minerals are known to occur in the planning area, they are not expected to generate substantial interest during the life of the RMP under Alternative A. The process of establishing a mining operation involves site reconnaissance, prospecting, exploration, economic evaluation, and mine development. Based on the anticipated limited interest and depending on the market for gold, up to 10 exploration projects for epithermal gold deposits are expected over the next 15 to 20 years. Exploration activity may result in the

[4] Because future commodity prices are difficult to predict, existing prices are used as a proxy for future conditions.

discovery one open-pit deposit, which would lead to the development of one open-pit gold or silver mine (using chemical heap leaching) under Alternative A.

Mine development includes the development of mine infrastructure, such as construction of buildings and mills, pre-stripping (open-pit mines), building access/haul roads, and placing utility services. The capital outlays associated with mine development are not known at this time, but could be substantial, and would represent a major input to the local economy that would result in local income and job creation and would generate tax revenues for federal, state, and local governments.

The RFD estimates that operation of an open-pit gold/silver mine would employ about 170 people, with the potential to extract between 10 and 90 million tons of ore deposits over the life of the mining operation. The best estimate of available ore deposits is approximately 15 million tons, averaging 0.06 troy ounces of gold per ton. Based on this level of production, it is estimated that locatable mineral activity in the planning area could produce a total of up to roughly 900,000 troy ounces of gold with a market value of approximately $378 million[5]. In addition to the value of gold output, the local economic benefits of gold production include direct labor (170 employees) and income effects, indirect (or secondary) economic benefits as money is circulated through the local economy, and related tax revenues. Compared to existing conditions where no locatable mineral extraction occurs, these effects represent a major and beneficial economic and fiscal impact of Alternative A.

Under Alternative B, approximately 5,000 acres in the Cedars ACEC and the entire Stornetta management area would be closed to future locatable mineral exploration and development. Under Alternatives C and D, the Stornetta management area would be closed and the Black Forest and Cache Creek management area would be closed to locatable mineral activities that require reclamation. (Note that the Stornetta area is already closed to mineral entry and sales under the interim management guidelines.) Because less land would be available for locatable mineral exploration and development under these alternatives, there is the potential that the economic and fiscal benefits described under Alternative A would not be fully realized depending on the location of future discoveries. Based on the relative difference in the extent of areas available for locatable mineral extraction, this is considered a potentially minor long-term adverse economic and fiscal effect of Alternatives B, and a minor to moderate adverse effect of Alternatives C and D.

Solid Minerals – Saleable Minerals

There are known holdings of saleable minerals on public lands in the planning area, primarily sand and gravel and crushed/broken rock. The major uses of saleable minerals are road development and maintenance and commercial sales mainly to the construction industry. No sales of saleable materials have occurred on public lands in the planning area over the past 10 years.

Under Alternative A, the Ukiah planning area is generally available for mineral materials sales except as noted in the existing withdrawals; no new withdrawals would be proposed. Under this alternative, it is estimated that up to five exploration projects for saleable minerals will occur in areas of known or suspected occurrences of mineral materials over the next 15 to 20 years. Approximately one exploration project may be conducted for sand and gravel, two for rock aggregate (i.e., crushable or naturally broken material), and two for decorative rock. Exploration activities are expected to induce a limited level of

[5] Gold prices were estimated at $420 per troy ounce based on current market conditions.

local spending, which would result in intermittent and minor local job/income and related tax revenue benefits.

Based on the results of exploration activities, there is the potential for the development of mining operations for saleable minerals under Alternative A. Mine development normally involves a pit or quarry, space for processing, and a staging area. During the planning horizon covered by the RMP, it is expected that no new sand and gravel deposits with good quality material would be developed, one new deposit of good quality rock aggregate material would be developed, and one new collecting site would be designated for decorative stone to meet the increase in demand. At this time, the expected quantity and specific type of saleable mineral production associated these forecasted mine developments is not known. Also, the value (or price) of these commodities varies significantly based on the specific characteristics of the material. On average, rock aggregate materials and decorative stone can range from $10-15 per ton and $20-70 per ton, respectively, depending on the type of material and region where purchased (Get-A-Quote.net). Although difficult to project at this time, the economic impact of mine development and production could lead to substantial economic benefits, including direct and indirect jobs and income and related tax revenues. Relative to existing conditions, these effects are considered moderate to major, long-term, beneficial impacts of Alternative A.

Under Alternatives B, C, and D, the same management parameters described above for locatable minerals also apply to saleable minerals. Based on a decrease in the potential land available for saleable mineral exploration and extraction under these alternatives, there is the potential that the economic and fiscal benefits described under Alternative A would not be fully realized depending on the location of future discoveries. This is considered a potentially minor and long-term adverse economic and fiscal effect of Alternative B, and a minor to moderate adverse effect of Alternatives C and D.

Fluid Minerals – Oil and Gas

Reasonably foreseeable oil and gas development is based on known or inferred oil and gas potential in the planning area, and could be affected by changes in available geologic data or economic conditions. Based on the history of minimal activity for oil and gas exploration and development on federal lands within the planning area, activity over the next 15 to 20 years is likely to be sporadic, consisting of the issuance of some competitive and over-the-counter leases, a few geophysical surveys, and perhaps the drilling of three to five exploratory wells, with no more than 3-4 development wells, and the development of associated facilities/gas transmission lines. Expected activities include geophysical exploration, drilling, and minor road construction. However, exploratory drilling is not expected to lead to the development of a producing oil or gas field in the planning area.

Under Alternative A, the Ukiah planning area is generally available for fluid mineral leasing (i.e., oil, gas, and geothermal resources), except for Cache Creek and as noted in the existing withdrawals; no new withdrawals would be proposed. Based on the projected conditions described above, the economic impact of future oil and gas activity is expected to be minor under Alternative A. There would be some short-term spending associated with exploratory activities that could result in minor economic benefits in terms of jobs, income, and fiscal resources, but because no new oil or gas production is expected, there would not likely be any long-term beneficial socioeconomic impacts generated by oil and gas development under Alternative A.

Under the three action alternatives, there would be more restrictions placed on fluid mineral leasing relative to future No Action conditions under Alternative A. In addition to areas already closed for leasing (including Cache Creek and Stornetta under its interim management guidelines), Alternative B would close an additional 34,000 acres within the Cache Creek WSA and an additional 5,600 acres in the Cedar Roughs WSA to fluid minerals leasing. Leasing restrictions would be greater under Alternatives C and D, and would also include the closure of the Cache Creek management area, 6,350 acres in the Cedar Roughs management area, 5,000 acres in the Cedars ACEC, and the Black Forest area. Because more land would be subject to closure for oil and gas exploration, the minor short-term socioeconomic benefits generated by Alternatives A, B and C would potentially be less than Alternative A; this is considered a minor adverse socioeconomic impact of the action alternatives. However, if a major oil or gas discovery does occur unexpectedly, the adverse impacts of these closures would be major. Nevertheless, because it is assumed there would be no oil or gas discoveries or production in the future under any of the alternatives, there would likely be no new long-term socioeconomic impacts under these action alternatives relative to Alternative A.

Fluid Minerals – Geothermal

Projections of "reasonably foreseeable development" of geothermal resources in the planning area are organized into three areas: (1) The Geysers, (2) Geysers-Calistoga KGRA, and (3) other parts of the planning area. Projected geothermal activity under Alternative A varies considerably across these three regions. Generally, geothermal activity in the Geysers area would be the most intense and is anticipated to be fairly consistent with the current development seen in the rest of the existing field. Development within this region would include drilling of geothermal production and injection wells and the development of four new power plants (with a total capacity of 80-200 MW), various Enhanced Geothermal Systems (EGS)[6], and a range of ancillary facilities (e.g., pipelines, access roads, transmission intertie lines, and various minor structures) to support operation and maintenance of existing and new development. Outside of the Geysers region, but inside of the Geysers and Calistoga KGRA, geothermal development is expected to be much less intense, consisting of exploration activity and the development of up to 3 new binary-cycle power plants (with a total capacity of 30-60 MW) and up to 4 new direct use facilities[7]. In other parts of the planning area, development will be minimal and limited to exploration and one direct-use facility; and it is assumed no power plants would be constructed.

The local economic impacts of anticipated geothermal development under Alternative A are driven by the capital costs of development projects, the extent of spending in the local region during construction and operations, and the market value of power produced at geothermal facilities on BLM lands. The construction of seven new power plants and five direct-use facilities would require substantial capital expenditures on equipment and other goods and services and a large construction workforce, which would result in direct and indirect economic benefits to the region, including increases in employment and income and related fiscal revenues. During operations, the economic and fiscal benefits of these projects would continue. Based on the expected increase in geothermal generating capacity (an additional 110-260 MW relative to existing conditions), it is estimated that new geothermal production on BLM lands in the planning area under Alternative A could generate between about 0.77 to 1.82 million MWH[8]

[6] One foreseeable EGS project is the continued expansion and improvement of injection to help sustain reservoir pressures and extend the life of the field. Two such projects have already been completed.

[7] A direct use facility uses the heat without converting it to electricity.

[8] Assumes a load factor of 80 percent based on production figures under existing conditions.

of electricity with a current market value of approximately $97.9-229.0 million[9]. In addition to the market value of power, the local economic benefits of power production include direct labor and income effects, indirect (or secondary) benefits as money is circulated through the local economy, and related tax revenues. Overall, the short-term construction and long-term operation of geothermal developments under Alternative A would be a major and beneficial economic impact.

Although fluid mineral leasing would be generally more restrictive under the three action alternatives, the Geysers area would remain open to geothermal development under all of the RMP alternatives. Because nearly all of the geothermal development is expected to occur in the Geysers area, Alternatives B, C and D are expected to generate the same level of socioeconomic benefits described above under Alternative A. Therefore, no new geothermal-related socioeconomic impacts would occur under these alternatives relative to future No Action conditions under Alternative A.

The development of mining claims, oil, gas, or geothermal projects on BLM-administered lands has the potential to cause major beneficial increases in income and employment opportunities for minority and low-income populations. Section 4.5.11 provides an overview of the many different types of positive economic effects that would be associated with the development of such projects, and many of these effects would be experienced by minority and low-income populations that work at the development sites. These beneficial effects could include improvements in public services for minority and low-income populations if the tax revenue increases associated with mineral development projects are directed towards the agencies that provide such populations with a variety of public services. In general, the amount of future mineral development expected in the planning area, and thus corresponding benefits to minority and low-income populations, would be greatest under Alternative A and would vary by alternative depending upon the type of minerals being managed. With respect to solid minerals, Alternatives B, C and D would reduce the amount of land available for the development of such minerals and therefore these alternatives would reduce the economic benefits associated with Alternative A. With respect to oil and gas management, Alternatives B, C and D would include more restrictions on the development of such minerals relative to Alternative A, and while major new oil and gas development projects are not expected to take place, the additional restrictions under these three action alternatives could preclude the types of economic benefits described above if a major oil or gas development does occur unexpectedly. The overall magnitude of geothermal development over time, and associated economic benefits, is expected to be roughly the same in the planning area under each of the RMP alternatives.

On the other hand, those minority and low-income populations who recreate or live near mineral areas that may be developed could experience negative effects if they place a high value on solitude or scenic vistas, if their property values decline, or if hunting, OHV or other recreation opportunities diminish as a result of mineral extraction projects. Such development projects could also have a major negative effect on Native Americans if cultural resources of importance to Native Americans are disturbed during the development of mineral resources.

[9] The average market value of power is based on the forecasted California statewide weighted average retail electricity prices for Investor Owned Utilities (IOUs) and Municipal Utilities for 2005 -- 12.57 cents per kWh (California Energy Commission 2005).

4.5.12 Impacts on Social and Economic Conditions from Wind Energy

Some lands in the RMP planning area may be used to develop wind energy projects based on their favorable wind characteristics and the expected increase in demand for such projects in California and other western states. (There is no existing production of wind energy on BLM lands in the planning area.) The potential development of geothermal energy projects is addressed in Section 4.5.12.

A forecast of renewable wind energy development under future No Action conditions under Alternative A was made as part of the RFD prepared by BLM for this RMP planning effort (see Appendix J). Wind energy development is expected to occur in four of the management areas that comprise the RMP planning area: Berryessa, Geysers, Knoxville, and Indian Valley/Walker Ridge; development is not expected to occur in the other management areas, which are designated exclusion areas in all of the action alternatives. The estimated future power production ranges under the No Action Alternative in these management areas is as follows:

- **Berryessa:** 37.5 to 123 MW (25 to 82 1.5 MW turbines)
- **Geysers:** 16.5 to 180 MW (11 to 120 1.5 MW turbines)
- **Knoxville:** 6 to 19.5 MW (4 to 13 1.5 MW turbines)
- **Indian Valley/Walker Ridge:** 6 to 109 MW (4 to 73 1.5 MW turbines)

The economic effects of wind energy development are driven by capital expenditures associated with infrastructure development, including wind turbines and transmission facilities, the market value of power produced from wind energy projects, and projected expenditures during the operation and maintenance phase of such projects. At this time, there are no available site-specific cost estimates for wind energy development under any of the RMP alternatives. However, under Alternative A, it is estimated that approximately 44 to 288 (1.5 MW) turbines would be developed with a maximum power generating capacity of 66 to 432 MW annually. Overall, this level of wind energy development in the planning area is expected to result in major short- and long-term economic and fiscal benefits to the region as described below.

Based on typical development costs[10], it is estimated that the capital cost of this level of wind energy development would be roughly $66-432 million. Such substantial expenditures for infrastructure development would induce local spending on certain construction-related goods and materials, while other equipment, such as the wind turbines, are not produced locally. Local and out-of-region labor also would benefit with moderate to major increases in jobs and income during the construction period. Related fiscal benefits would also be enjoyed at the local level from an increase in tax revenue. From an operations perspective, direct employment benefits would be limited because wind energy facilities generally do not require a large operations workforce. However, the market value of the power produced would generate long-term economic and fiscal benefits in the region. Based on maximum capacity figures and average load factors for wind energy[11], it is estimated that approximately 173,000 to 1.14 million megawatt-hours (MWH) of renewable power would be produced annually on BLM lands under

[10] It is estimated that wind farms cost approximately $1 million per megawatt of installed capacity (American Wind Energy Association 2002).

[11] A typical load factor of 30 percent was used for wind energy projects. The load factor of wind varies according to the site and the type of turbine (Galeforce Ltd. 2005).

Alternative A. This level of production, with a retail value of $21.8 – $142.7 million per year[12], would generate direct and indirect jobs and income in the region, as well as fiscal benefits for local jurisdictions from related property, sales and income tax revenues.

The potential for wind energy production under the three action alternatives varies based on management directives to designate certain management areas as exclusion or avoidance areas. Generally, Alternative B is the most restrictive, designating Berryessa, Walker Ridge, and Knoxville as exclusion areas. Therefore, wind energy development would only be expected to occur in the Geysers area, with production ranging between 16.5 to 180 MW. Under this alternative, the capital costs of infrastructure development would be roughly $16.5 to $180 million, and the market value of power produced would be $5.5 to $59.5 million. Although the related future economic and fiscal benefits generated under this alternative would be greater than existing conditions, these benefits would be substantially less than future No Action conditions under Alternative A; these are considered major long-term adverse economic and fiscal impacts of Alternative B.

Under Alternative C, Walker Ridge and Knoxville would be designated avoidance areas for wind energy development and Berryessa would be an exclusion area. Wind energy development would be allowed to occur in the Geysers area. Because the probability of wind energy development in designated avoidance areas is low, this alternative is expected to result in a comparable level of development and power production relative to Alternative B (Preferred Alternative for Cow Mountain, Cache Creek, Cedar Roughs, Stornetta, the Geysers, and Scattered Tracts). Therefore, the related economic and fiscal effects would be roughly the same as described above for Alternative B.

The least restrictive alternative, in terms of wind energy development, is Alternative D (Preferred Alternative for Knoxville, Indian Valley, and Berryessa). Under this alternative, the only exclusion area would be Berryessa. Development could occur at Walker Ridge and Knoxville, as well as the Geysers. In total, wind energy production in these management areas is expected to range between 28.5 to 308.5 MW. Based on these production levels, the capital costs of infrastructure development would be roughly $28.5 to $308.5 million, and the market value of power produced would be $9.4 to $101.9 million. Similar to all of the action alternatives, the related future economic and fiscal benefits generated under Alternative D would be greater than existing conditions. However, these benefits would be less than future No Action conditions under Alternative A, yet greater than Alternatives B and C; these are considered moderate long-term adverse economic and fiscal impacts of Alternative D.

Minority and low-income populations would be affected by the wind energy management actions in a manner that would be very similar to those potential impacts described above under the minerals management-related section above. These positive and negative potential impacts would be most likely under Alternative A and Alternative D, which only includes one wind energy exclusion area. Potential impacts under Alternatives B and C would be similar but of less magnitude than those potential impacts associated with Alternatives A and D. Social impacts from wind energy management actions are difficult to identify, because, like with special designations, opinions vary so widely; some people value an increased reliance on renewable energy resources, while others feel the wind turbines are ugly and detract from the landscape.

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[12] The average market value of power is based on the forecasted California statewide weighted average retail electricity prices for Investor Owned Utilities (IOUs) and Municipal Utilities for 2005 -- 12.57 cents per kWh (California Energy Commission 2005).

4.5.13 Impacts on Social and Economic Conditions from Travel Management and Route Designation

Socioeconomic impacts associated with travel management and access measures in the RMP would be based primarily on activities related to road closure/rehabilitation, development of new roads and trails, and future road maintenance activities. These types of management actions would likely result in localized spending for goods and services during project implementation, which would generate direct and indirect economic and fiscal benefits; these intermittent benefits are expected to be vary by alternative as described below. Because BLM provides its own road maintenance services on public lands (including the use of private contractors), there would be no adverse public service and related fiscal effects on local road maintenance agencies under any of the alternatives. In addition, improvements in travel management and access would increase the quantity and improve the quality of recreation resources, which would indirectly result in the types of recreation-based economic/fiscal benefits described in Section 4.5.14.

Under Alternative A (Preferred Alternative for Cache Creek, Cedar Roughs, and Berryessa), there would be no change in the BLM's existing road infrastructure; therefore, the same level of demand for transportation-related goods/services and labor would continue (approximately $225,000 annually), including privately-contracted road maintenance services (an additional $10,000 per year). This would result in the continuation of minor economic benefits, including direct and indirect income and employment benefits from local spending and direct hiring of private road maintenance contractors hired by BLM. These economic benefits would, in turn, lead to negligible, long-term, and beneficial fiscal resource impacts from sales and income taxes. However, because there would be no change relative to existing conditions, no new socioeconomic impacts would result.

Alternative B (Preferred Alternative for Indian Valley) would lead to the removal and rehabilitation of various roads and trails across management areas. Because more roads would be closed to public access relative to existing conditions, there would be less demand for road maintenance services under this alternative. Therefore, the need for the use of local contractors for road maintenance services could decline slightly, potentially resulting in related negative, but minor, income and employment effects. In contrast, road rehabilitation efforts could induce local spending for various goods and services. This could result in minor intermittent job and income benefits in the local communities where this spending occurs.

Under Alternatives C (Preferred Alternative for Cow Mountain, Knoxville, Stornetta, the Geysers, and Scattered Tracts), some roads would be removed and rehabilitated (less than Alternative B), and a range of new trails would be constructed. Because roads are being both closed and developed under this alternative, the net demand for road maintenance services is unknown. To the extent that the demand for road maintenance services increase/decreases, there could be minor beneficial/adverse economic effects for local contractors providing these services. In addition, both road rehabilitation and trail construction would generate local economic and fiscal benefits (i.e., income, jobs, and related sales and income taxes) based on the magnitude of spending on these types of projects.

Alternative D would result in the greatest amount of new trail construction; no roads would be removed and rehabilitated. Because this alternative would likely generate the most spending (on trail development) and require the highest degree of road maintenance services (due to a larger trail network), it would likely generate the greatest economic and fiscal benefits, similar in nature to those described above.

Under all of the RMP alternatives, the transportation system would provide administrative/official, fire and emergency access for management and visitor/resource protection purposes. In addition, BLM would coordinate and assist local counties to ensure that the local road system is integrated with the BLM roads network. As such, all of the alternatives would facilitate the provision of public services, such as law enforcement, fire protection and other emergency services, such as search and rescue operations, on BLM lands. Therefore, this would likely lead to long-term public service and fiscal benefits under all of the action alternatives as access and response times improve and agency expenditures are reduced in situations where access is improved.

Road closure and rehabilitation, the development of new roads and trails, and future road maintenance activities all would likely increase employment opportunities for minority and low-income populations. The BLM would likely hire local contracting firms to implement these actions, who in turn would likely need to add more workers. Local spending would increase, thus creating direct and indirect income effects and other types of economic benefits. Travel management and access improvements also would likely improve recreation opportunities for those who enjoy using their vehicles as they recreate. This would lead to the same types of impacts as those described above under the recreation-related impacts. Travel management and access-related spending and related impacts would likely be the greatest under Alternative D, but each of the other action alternatives also would increase spending for different types of actions relative to Alternative A.

4.5.14 Impacts on Social and Economic Conditions from Recreation Resources

Socioeconomic impacts from recreation-related management under the RMP alternatives are based on projected changes in visitor use and new facility development; effects from changes in user fees are not directly analyzed here because fees would only affect the fiscal resources of BLM. Future recreation use in the planning area has the potential to affect local and regional socioeconomic resources via visitor spending patterns. New facility developments would require significant capital outlays on materials, equipment, and labor needed to construct proposed facilities. Both of these drivers of socioeconomic impacts would generate localized spending that circulates through the local economy, resulting in direct and indirect economic benefits (in the form of jobs and income) in affected sectors. Future recreation use could also affect the provision of certain public services and the related fiscal resource conditions of local and state agencies.

Future recreation use across management areas was estimated for each of the four RMP alternatives. (Detailed information on the methodology and results of the recreation use projections, as well as existing recreation use levels, are presented in Section 4.14). Projected recreation use in the planning area across alternatives is summarized in Table 4-1.

Potential Income and Employment Effects from Recreation Use

The estimated total number of recreation visitor days (includes casual recreation use and Special Recreation Permits) in the Ukiah Field Office planning area in year 2030 ranges between approximately 459,500 and 599,100 under the four project alternatives. Relative to existing conditions (352,304 visitor days), this represents an increase of roughly 107,200 visitor days under Alternative B to 246,800 visitor days under Alternative D. Of the three action alternatives, only Alternative B would result in a lower level of recreation use relative to future No Action conditions. In order to translate projected recreation

use levels into potential income and employment effects associated with the alternatives, it was necessary to make several assumptions regarding future recreation use and spending. It is assumed that the same proportion of existing resident (60 percent) versus non-resident visitors (40 percent) would utilize the recreation resources in the Ukiah planning area in the future; in other words, there would be no change in the participation rates across recreation activities relative to existing conditions and the proportion of recreation spending "captured" by the local economy would remain constant.

Table 4-1: Recreation Use Projections (in Visitor Days)

ALTERNATIVE	PROJECTED VISITOR DAYS (2030) [1]	CHANGE IN VISITOR DAYS [2]
Existing Conditions	352,204	--
Alternative A (Preferred Alternative for Knoxville and Berryessa)	505,701 (480,416 – 530,986)	+ 153,397 (43.5%)
Alternative B	459,478 (436,504 – 482,452)	+ 107,174 (30.4%)
Alternative C (Preferred Alternative for Cow Mountain, Indian Valley, Cache Creek, Cedar Roughs, Stornetta, the Geysers, and Scattered Tracts))	560,587 (532,558 – 588,616)	+208,283 (59.1%)
Alternative D	599,124 (569,168 – 629,080)	+246,820 (70.1%)

[1] Numbers in parentheses represent range of recreation use projections (plus/minus 5 percent).

[2] Represents absolute and percentage increase in recreation use relative to existing conditions.

Source: EDAW 2005

Based on these assumptions and following the methodology discussed in Section 3.16 (Affected Environment), total recreation expenditures were estimated for the four project alternatives. Table 4-2 summarizes direct recreation expenditures and associated income and job effects by alternative, as well as non-market/consumer surplus value estimates for recreation opportunities in the planning area, which are discussed in more detail below. (It should be noted that a dollar value can also be placed on other types of environmental benefits associated with resources found in the planning area (commonly referred to as "non-market" values); however, such values are difficult to quantify and require extensive surveys and other techniques that were not conducted for this analysis.)

Based on these direct expenditures, and using applicable recreation-based multipliers, it is estimated that recreation use in the planning area would generate about $6.07 million in direct labor and proprietor income and directly support approximately 354 jobs in the regional nine-county economy under Alternative A (with effects concentrated in communities in close proximity to recreation areas). The estimated direct economic effects of the three action alternatives include: $5.49 million in income and 320 jobs under Alternative B, $6.75 million in income and 394 jobs under Alternative C, and $7.23 million in income and 422 jobs under Alternative D. The total direct, indirect, and induced effect of these expenditures circulating through the regional economy could amount to approximately $10.59 million in income and 487 jobs under Alternative A, $9.58 million in income and 441 jobs under Alternative B, $11.78 million in income and 542 jobs under Alternative C, and $12.62 million in income and 581 jobs under Alternative D. In addition, the estimated "willingness-to-pay" value, the value (or worth) of the experience to the recreationists, is estimated to range between $13.5 million (Alternative B) and $17.6

million (Alternative D). Because the estimates of future recreation use in the planning area represent the mid-point of the potential range of future use levels, the associated economic impacts presented above could range higher/lower as shown in Table 4-2.

Table 4-2: Potential Socioeconomic Effects from Projected Recreation Use in the Ukiah Field Office[1]

ALTERNATIVE	DIRECT EXPENDITURES[2]	RELATED INCOME EFFECTS[2]		RELATED EMPLOYMENT EFFECTS (JOBS)[2]		EXAMPLE OF NON-MARKET EFFECTS (WILLINGNESS-TO-PAY FOR RECREATION-RELATED BENEFITS)[2]
		DIRECT	TOTAL[3]	DIRECT	TOTAL[3]	
Existing Conditions	$12.21	$4.23	$7.38	246.7	339.5	$10.35
Alternative A	$17.51	$6.07	$10.59	353.8	486.9	$14.86
Alternative B	$15.85	$5.49	$9.58	320.3	440.8	$13.52
Alternative C	$19.48	$6.75	$11.78	393.8	541.9	$16.45
Alternative D	$20.87	$7.23	$12.62	421.9	580.6	$17.60

[1] The values reported above could vary plus/minus 5 percent based on the range of recreation use estimates provided in Table 4-1.

[2] Millions of dollars annually; reported in constant 2004 dollars.

[3] Includes direct, indirect, and induced impacts.

When analyzing the project's socioeconomic impacts, it is important to evaluate the relative change between income and job effects associated with the project alternatives and existing conditions. However, the comparison of economic effects between the action alternatives relative to future No Action conditions is more informative as it shows the consequences of choosing a particular action alternative versus continuing existing management actions. All of the project alternatives are expected to result in an increase in recreation-induced income and jobs at 2025 relative to existing conditions. When assessed relative to future No Action conditions, however, only Alternatives C and D would generate more income (an increase of $1.19 and $2.03 million, respectively) and higher employment levels (an increase of 55 and 93.7 jobs, respectively), thereby resulting in local and regional economic benefits. Conversely, lower recreation use levels under Alternative B would adversely affect the local economy based on a relative decrease in economic benefits.

It is also important to consider the magnitude of the income and job effects in the context of the size of the economy that is primarily affected. Because the planning area and regional economy is large (consisting of nine counties), the recreation-related economic impacts described above are relatively minor. For example, under Alternative D (which would likely result in the greatest economic benefits), the estimated increase in total recreation-induced income relative to future No Action conditions is just over $2 million, which represents only 0.003 percent of the total income base of the nine-county region. Similarly, the maximum relative increase in total jobs is estimated to be about 94 jobs (also under Alternative D), which represents only about 0.01 percent of the region's total job base. Therefore, under Alternatives C and D, recreation-related economic benefits generated by recreation spending in the planning area are considered long-term, yet minor, beneficial impacts from a regional perspective. The relative decrease in economic benefits under Alternative B is even smaller, and constitutes a minor, long-term and adverse economic impact of this alternative. However, recreation-related economic effects could be substantial from a local community or individual business or employee perspective. Local communities, with a substantially smaller economic base, may depend on recreation and tourism revenues generated by users of BLM land. Further, for local business owners and their employees, such

impacts could be major depending on a number of factors, including their specific location relative to visitor travel routes, how much of their existing business capacity is being utilized now, room for expansion, etc.

Potential Public Services and Fiscal Resources Effects from Recreation Use

Some public services and related fiscal conditions would likely be affected by changes in recreation use over time in the planning area. The need for law enforcement and emergency services, including rescues of injured or lost visitors, would change in proportion to changes in the amount of recreation use summarized in Table 4-1. The primary agencies affected would be the county sheriff departments, which support BLM in providing law enforcement and emergency services in the planning area. All of the alternatives would likely lead to an increase in the demand for law enforcement and emergency services relative to existing conditions; however, Alternative B would likely result in a decline for such services relative to future No Action conditions.

The budgets of these agencies also would likely be affected as recreation use changes over time. The magnitude of these potential public service and fiscal impacts are very difficult to predict, given the wide range of service capacities and financial conditions of each potentially affected agency; however, such impacts are not expected to be major.

The fiscal resources of local governments would also be indirectly affected by future recreation use levels primarily through sales and, to a lesser extent, lodging taxes. Expenditures for most recreation-related goods and services are subject to state sales taxes that are collected by the state and distributed to counties. For overnight visitors, lodging taxes are also collected at the county level. Because the distribution of total recreation expenditures among goods, services, and lodging is not known, it is not possible to quantify sales and lodging tax effects on the county's fiscal resource base. However, based on the projected recreation use estimates in Table 4-1 above, it can be concluded that tax revenues would likely increase under all of the alternatives, with the greatest fiscal benefits occurring under Alternative D. These tax revenue impacts would likely be minor relative to total county tax revenues.

Potential Economic and Fiscal Effects from Recreation Facility Development

In addition to socioeconomic effects related to recreation use, there is the potential for major socioeconomic impacts associated with the development of recreation facilities under the various RMP alternatives. While no new facilities would be developed under Alternatives A and B, some new facilities would be built under Alternatives C and D. These new recreation facilities would be minimal and developed to meet the needs of visitors, protect resources, and promote visitor safety and knowledge of the area. New facilities would require construction-related expenditures, including the purchase of goods/materials and construction labor. To the extent that spending is made locally and local labor is used, facility development would result in short-term economic benefits for the region in the form of direct and indirect employment and income effects. It would also generate sales and income tax revenue for local agencies. Because the extent of new facility development would be minimal under Alternatives C and D, the economic and fiscal benefits are expected to be minor.

Potential Consumer Surplus Effects

Table 4-2 also indicates that the consumer surplus values, which are one type of non-market value experienced by recreationists, would likely be highest under Alternative D, followed by Alternatives C, A and D. All the alternatives would result in higher consumer surplus values relative to existing conditions; however only Alternatives C and D would result in minor, long-term, and positive consumer surplus impacts relative to future No Action conditions under Alternative A. On the other hand, Alternative B would result in relatively lower consumer surplus values, which is minor, long-term, and adverse impact.

Minor negative impacts would occur to the rural isolated character of the communities surrounding the Ukiah Field Office, particularly for those residents who moved to the area to get away from mainstream society. These would occur under Alternatives A, C, and D. However, with projected use increases these impacts are expected to be minor. Moderate positive social impacts would be realized by continued expansion of environmental education programs, especially to local school groups. Also, the increase in trails and other recreation opportunities would improve amenities for local residents to enjoy the outdoor resources in their backyards, by providing additional community green space.

The proposed recreation management actions being considered under the RMP alternatives would mostly cause positive impacts for those minority and low-income populations who recreate on planning area lands and enjoy more recreation opportunities or an enhancement in the quality of their recreation experience. Such populations would also benefit from an increase in economic activity associated with additional spending by recreationists in the planning area, or as they travel from other areas to the planning area. Some negative impacts could be experienced by such populations if recreation use increases adjacent to or nearby those areas where they work or live, or if additional recreation use causes additional vandalism or other conflicts with Native American cultural sites or practices. None of these potential impacts would likely be major unless considerable damage does occur to Native American sites. The likelihood and magnitude of these positive and negative impacts would correlate with the amount of recreation use associated with each RMP alternative; thus, impacts would most likely occur under Alternative D, and Alternative B would likely cause the fewest impacts.

4.5.15 Impacts on Social and Economic Conditions from Interpretation and Education

The development of interpretive/educational facilities (e.g., signs, exhibits, waysides, kiosks, brochure distribution boxes, etc.) in the planning area has the potential to result in a range of socioeconomic impacts, which would be dependent on the type and magnitude of intermittent spending needed to implement interpretive/educational projects in the planning area. Spending in the local economy would result in direct and indirect economic benefits in the form of jobs and income for local businesses and workers, as well as sales and income tax revenues for local jurisdictions and state/federal governments. In addition, interpretative and educational improvements would likely increase the quantity and improve the quality of recreation resources, which would indirectly result in the types of recreation-based economic/fiscal benefits described in Section 4.5.14.

Under Alternative A, no new interpretive facilities or visitor centers would be constructed. Therefore, there would be no economic impact related to interpretation and education under this alternative.

The three action alternatives (Alternatives B through D) all contain management actions that allow for some level of interpretive/education development greater than Alternative A. Alternative B would

develop limited interpretive facilities, and no detached visitor centers would be constructed. Under Alternative C (Preferred Alternative), an adequate level of interpretive facilities would be constructed to meet visitor and resource needs, existing exhibits and kiosks would be maintained or updated, and detached visitor centers may be constructed if the need and funding is identified. The greatest amount of interpretive development would occur under Alternative D, which calls for the construction of interpretive facilities at all primary entry portals, installation of interpretive wayside panels in appropriate areas, and the construction and staffing of Visitor Information Centers at high resource value areas. To the extent that spending for goods/services and labor occurs locally, these developments could result in minor to major beneficial economic impacts on the local economy during project implementation, particularly associated with the development of any large-scale visitor center projects. Based on the proposed features described above, the greatest economic benefits would be realized under Alternative D, followed by Alternatives C and B.

New interpretation and education actions can benefit minority and low-income populations in a couple of ways. First, educational benefits would be enjoyed by those fortunate to visit new visitor facilities or interpretation sites. Field trips by school children or other visits would increase education and interpretation opportunities and improve the quality of related recreational experiences. The construction of new facilities also could create new employment opportunities for minority and low-income populations. The greatest educational and economic benefits would be realized under Alternative D, followed by Alternatives C and B.

4.5.16 Impacts on Social and Economic Conditions from Soil Resources

The proposed improvement in soil resource conservation and management on BLM lands in the planning area would result in minor and positive socioeconomic effects as additional spending would be required to implement the various soil conservation efforts prescribed under the RMP alternatives. Under all of the alternatives, BMPs would be implemented at the site-specific project level to maintain or improve soil resources. In addition, there is some degree of monitoring, assessment, and rehabilitation of trails and related soil resources under all of the alternatives. Over the long-term, these types of soil conservation efforts would lead to intermittent expenditures for equipment, materials, and labor required during plan implementation. To the extent these expenditures are made locally, the RMP would generate local economic and fiscal benefits, including positive effects on jobs and income and related increases in sales and income tax revenues. These include direct effects from the initial expenditure and indirect (or secondary) effects as money is circulated throughout the economy via the "multiplier effect."

At this time, it is not known which alternative would lead to the highest levels of local expenditures although Alternative D would likely generate the most socioeconomic benefits because it represents the most active management approach, while Alternatives A and B would likely provide the least economic benefits; however, the degree of differences in impacts among the alternatives is expected to be minor. Alternative C is the Preferred Alternative for soil resource management decisions throughout the planning area.

The management of soil resources in the context of road and trail management also has the potential to affect public services. All of the alternatives would retain administrative and emergency access at the Cache Creek Natural Area, which would avoid potential access restrictions for service providers,

particularly fire protection. Therefore, all of the alternatives would continue to provide long-term public service benefits.

Additional spending on soil conservation efforts would lead to the same type of economic-related benefits for minority and low-income populations as described above under the fish and wildlife and vegetation management-related sections. Soil conservation-related spending would be greatest under Alternative D because it represents the most active management approach, while Alternatives A and B would likely provide the least economic benefits.

4.5.17 Impacts on Social and Economic Conditions from Water Resources

Beneficial socioeconomic impacts from water resource management actions could result as expenditures are made to implement water-related projects in the planning area. Spending in the local economy would result in direct and indirect economic benefits in the form of jobs and income, as well as tax revenues for local jurisdictions.

Water resource-related management actions under Alternatives A and B focus on natural processes. Alternative B relies strictly on natural processes (with no management intervention), while Alternative A allows for some limited response to disturbances that could negatively impact water quality (within budgetary and personnel constraints). Based on these management approaches, Alternative A would continue to generate minimal and intermittent economic benefits over the long-term as projects are implemented. Because no related management actions would be allowed under Alternative B, no associated economic benefits would occur. This is considered a negligible, long-term, and adverse economic impact under this alternative.

Alternatives C (Preferred Alternative) and D would lead to a more proactive approach in terms of addressing water resource and quality issues. Alternative C would develop and complete projects to reduce sediment load and regulate/stabilize water temperatures, and Alternative D would address all known water quality issues and be proactive on prevention of further negative impacts to water quality. It is assumed that both of these alternatives would entail greater implementation of on-the-ground projects relative to Alternative A. As a result, implementation of water resource-based projects under Alternatives C and D is expected to result in moderate and beneficial economic impacts over the long-term.

4.5.18 Impacts on Social and Economic Conditions from Air Quality

None of the air quality-related management strategies that are part of the proposed RMP alternatives are expected to impact social or economic resources. Alternative A is the Preferred Alternative for air quality management decisions throughout the planning area. Alternatives C and D, unlike Alternatives A and B, would involve relatively proactive activities designed to improve water quality in the planning area. These alternatives could therefore increase some spending and economic activity, including employment opportunities for minority and low-income populations, if such spending is undertaken to improve water temperatures, reduce soil erosion, etc.

4.6 IMPACTS ON CULTURAL RESOURCES

The Ukiah Field Office maintains extensive and ongoing efforts on the local and regional level to maintain and preserve the integrity of prehistoric and historic archaeological resources and the traditional cultural resources so important to the maintenance of traditional lifeways among the present-day Native American community. The four alternatives offer varying degrees of protection and management of natural resources which, in turn, nearly always benefit cultural resources through landscape and habitat preservation, and the administration of the various management areas in the planning area.

The Ukiah Field Office has long considered the management of cultural resources as a cooperative effort between the BLM, the Native American community, and the general public. Preservation and research goals have been approached through public awareness and outreach programs, consultation with Native American groups, and cooperation with academic institutions. These efforts, combined with diverse natural resource management policies, constitute the basis for the documentation and preservation of cultural resources within the planning area.

4.6.1 Impacts on Cultural Resources from Visual Resources Management

4.6.1.1 Common to All Management Areas

Existing policies would remain in place to maintain or strengthen current management levels of VRM. Under this management scenario and the four alternatives, impacts on cultural resources would be negligible or in some cases positive under VRM Classes I and II as their objective is to preserve the existing landscape character. Through the preservation of the present-day landscape, subsurface and surface cultural deposits and remains would be protected and their integrity and scientific potential would be largely undisturbed under current management policies. However, variation in the designation of VRM classes among the management areas, and portions of individual management areas, illustrates the degree to which VRM policies can have potential impacts on prehistoric, historic, and traditional cultural properties.

Alternative B is the Preferred Alternative for VRM decisions in Cow Mountain, Knoxville, Cedar Roughs, and Stornetta. Alternative C is the Preferred Alternative for Indian Valley, Cache Creek, Berryessa, the Geysers, and Scattered Tracts.

4.6.1.2 Cache Creek

The Cache Creek management area contains many of the most significant cultural resources and archaeologically sensitive properties within lands under the management of the Ukiah Field Office. Under the four alternatives, various lands within the area would be designated under various VRM classes; ranging from Class I to Class IV although only Alternatives B, C (Preferred Alternative), and D retain full VRM classification designations. While Primitive and Backcountry Zones receive Class I and Class II designations under which higher levels of protection to cultural resources is inherent, some areas in the Middlecountry, Frontcountry, Rural, and Urban Zones fall under Class III or Class IV under Alternatives B, C, and D. These classes provide for more active management and allow landscape modifications not allowed under Classes I and II. Consequently, there is a potential for impacts to cultural resource in Cache Creek under these alternatives.

4.6.1.3 Stornetta

Alternatives B (Preferred Alternative) and C would, in general, benefit the Stornetta ranch property in that preservation of the visual aspects of the coastal setting in the Middlecountry and Frontcountry would preclude many potential impacts on documented prehistoric sites and historic-era resources that are situated in this area. The Stornetta Ranch, particularly within the immediate coastal zone, contains many potentially significant but as-yet-unrecorded Native American sites. The placement of new construction of facilities, trails, fences, etc. within the immediate coastal zone could impact documented and unrecorded sites, features and artifacts under management activities associated primarily with VRM Classes III and IV but to a lesser extent under Classes I-II which predominate the alternatives with the exception of Alternative D. Alternative D provides for up to VRM Class IV within this management area; and concurrent potential impacts to cultural resources through allowable landscape modifications.

4.6.1.4 Geysers

Although VRM classifications have not yet been developed for all the management areas and scattered tracts under Ukiah Field Office administration, VRM Classes II – IV, with an emphasis on IV, have been identified for the Geysers area. Classes III and IV in particular provide for higher levels of landscape modification; presenting the potential for impact to cultural resources not inherent in VRM Class I. The large-scale designation of portions of the Geysers management area as Class III and IV VRM could have significant impacts on this area. The Geysers, along with Cache Creek and the Stornetta properties, is one of the most culturally sensitive areas under Ukiah Field Office administration. While mitigation efforts necessary to minimize or eliminate impacts on natural or cultural resources are discussed within VRM Class III-IV designations, there is nonetheless a likelihood that significant archaeological resources could be adversely affected by these designations.

4.6.2 Impacts on Cultural Resources from Wildlife and Fish

The proposed RMP stresses the importance of the ecological health of wildlife and fish species and their habitats and their preservation, restoration, and enhancement through cooperative efforts between the Ukiah Field Office, the CDFG, the USFWS, and various local, state, and federal entities. The management of wildlife species and habitats through programs and activities including, but not necessarily limited to; monitoring, law enforcement, OHV restrictions, and habitat restoration could benefit the landscape on which cultural resources are or could be situated. Maintaining or enhancing current levels of habitat development through passive management and/or the restricting or limiting of impacting activities under all the alternatives within the management areas would have negligible to positive impacts on documented and unrecorded archaeological and traditional cultural resources.

Alternative C is the Preferred Alternative for wildlife and fish management decisions throughout the entire planning area, except for Cache Creek. The Preferred Alternative for Cache Creek is Alternative B.

4.6.3 Impacts on Cultural Resources from Vegetation Management

Vegetation management activities within all the management areas would focus on utilizing varying degrees of prescribed burns to eradicate and control exotic or noxious weeds. The use of pesticides, mowing, and grazing are potential control or eradication options. The more impacting methods

including plowing and chaining are not included in the various alternatives; prescribed burns and mowing are most commonly referenced.

In general, activities intended to eliminate and control invasive floral species would have negligible impacts on surface and subsurface archaeological remains and traditional cultural resources. Direct impacts such as the compromising of their context, condition, and integrity would likely not occur. However, in all management areas where prescribed burns would occur to varying degrees, it is important to note that vegetation burns expose large areas of relatively bare ground surface. This exposure can reveal surface artifact deposits that could provide indications of subsurface archaeological components. While this could result in a positive impact by allowing for the rapid identification and documentation of previously unrecorded resources or the additional documentation of known sites, in all likelihood this exposure of surface materials could result in a negative impact. Some of the areas where extensive vegetation management would be necessary also contain numerous documented sites that have been and continue to be threatened by illicit artifact gathering and looting sometimes on an almost industrial scale. Revealing surface artifacts and the possible locations of rich subsurface deposits could provide looters with ready and easy access to potentially significant archaeological materials. However, the required archaeological clearances prior to burns would make impacts on cultural resources negligible.

Alternative C is the Preferred Alternative for vegetation management decisions throughout the entire planning area.

4.6.4 Impacts on Cultural Resources from Riparian and Wetland Habitats

The management of riparian and wetland resources and settings relies on the functioning condition of the riparian and wetland systems. In general, the maintenance and management of these resources incorporates the preservation of natural landscapes that can contain surface and subsurface cultural manifestations such as artifact scatters, human interments, structures, or natural resources important in traditional Native American lifeways. Consequently, the preservation and enhancement of riparian and wetland settings, near which prehistoric resources in particular are often situated, would constitute a positive impact on cultural resources within the management areas and under the various alternatives.

Alternative C is the Preferred Alternative for riparian and wetland habitat management decisions throughout the entire planning area.

4.6.5 Impacts on Cultural Resources from Lands and Realty

Under possible Lands and Realty impacts, two potential management actions could have impacts on documented and unrecorded cultural resources situated on lands under the jurisdiction of the Ukiah Field Office. The disposition of properties in support of local community and development needs could have negative impacts on archaeological and traditional cultural resources. However, such disposals must be accompanied by the performance of environmental reviews within which assessments of potential impacts to cultural resources are integrated. In addition, none of the alternatives propose the disposal of any specific properties currently under BLM jurisdiction. As a result, it can be assumed that such impacts would be eliminated or reduced to negligible levels. There may also be a minor positive impact to cultural resources from BLM retention of parcels where they are located.

Positive impacts on cultural resources can occur through the acquisition of lands in cooperation with local, state, and federal agencies, and private landowners. Simply by placing lands under BLM jurisdiction, numerous cultural resource-specific regulations and requirements apply to the management of those properties that often do not exist under private or local administration. In addition, it is less likely that lands, once maintained by the BLM, would be subject to development, providing additional protection for cultural materials. Conversely, newly-public lands may receive more use than under private ownership, and so cultural materials may be exposed to greater wear; however, potential impacts from this cannot be determined without consideration of specific sites.

Alternative C is the Preferred Alternative for wildlife and fish management decisions throughout the entire planning area, except for Scattered Tracts. The Preferred Alternative for Scattered Tracts is Alternative B.

4.6.6 Impacts on Cultural Resources from Special Designations

Special Designations such as the ACEC seek to apply additionally stringent protections to preserve large and unique natural landscapes. Any restrictions, such as the prohibition of overnight camping, the use of motorized and non-motorized vehicles, and the closing of agricultural easements, to protect identified values would also protect the documented and unrecorded cultural resources situated within the designated landscape.

Alternative C is the Preferred Alternative for special designations management decisions in all management areas, except Cedar Roughs, Berryessa, and the Geysers. The Preferred Alternative for Berryessa and the Geysers is Alternative A, while Alternative B is preferred for Cedar Roughs.

4.6.7 Impacts on Cultural Resources from Forest Management

Forest lands potentially subject to commercial harvesting are present only in the Cow Mountain area and in Scattered Tracts under the Ukiah Field Office administration. As no commercial timber harvesting would occur under any of the alternatives, no impacts to cultural resources would occur.

Alternative A is the Preferred Alternative for forest management decisions throughout the planning area.

4.6.8 Impacts on Cultural Resources from Livestock Grazing Management

4.6.8.1 Common to All Management Areas

Livestock grazing has the potential to impact documented and unrecorded cultural resources through the effects of trampling, ground compaction, and erosion; all of which have the potential to disturb or destroy archaeological materials and their contexts. All of the alternatives provide for some level of grazing in all of the management areas, either for commercial purposes or for weed eradication or for the maintenance of fire lines or prescribed burn areas outside existing grazing allotments. In two of the management areas containing the largest number and most important and potentially significant archaeological resources, Cache Creek and Stornetta, grazing would continue under all of the alternatives but to varying degrees. In another highly sensitive management area, the Geysers, gazing would only be allowed under Alternatives A and B for fire maintenance and weed control.

Alternative A is the Preferred Alternative for livestock grazing management decisions in Cow Mountain, Cache Creek, and the Geysers. Alternative C is the Preferred Alternative in all other management areas.

4.6.8.2 Cache Creek

Within the Cache Creek area, grazing would continue as currently managed but there would be no active leases. Grazing would be conducted in order to control invasive weeds, maintain fire lines, and to maintain the natural character of the area. The Cache Creek area is unique in that it is subject to its own unique *Coordinated Resource Management Plan (CRMP)* (2004) which, in part, provides guidance for livestock grazing. Under this CRMP, the potential impacts of grazing on documented cultural resources must be considered and mitigated, resulting in negligible impacts on recorded sites.

4.6.8.3 Stornetta

All of the alternatives provide for continued grazing at Stornetta at least until the current lease expires in 10 years (2014). Under Alternatives A and B, at the expiration of this lease livestock grazing would only be allowed for weed control and/or hazardous fuels reduction. However, Alternatives C and D provide the potential for continued commercial livestock grazing pending the outcome of a rangeland and environmental assessment/Allotment Management Plan by the BLM. In addition, future construction of grazing-related facilities would be limited to protect natural and cultural resources, and the visual character of the Point Arena area. Considering the nature of the Stornetta property as a historic landscape that has been ranched continuously for several generations (albeit undesignated as such at this point in time), maintaining active commercial-level grazing with consideration of potential impacts to existing cultural resources would maintain the historic character of the ranching landscape. Hence, Alternatives C and D would have a negligible impact on cultural resources in the Stornetta management area; including the ranch landscape and archaeological sites, features, and artifacts.

4.6.9 Impacts on Cultural Resources from Fire Management

All of the alternatives provide for aggressive methods of fire management within the management areas ranging from prescribed burns and preventive livestock grazing to mechanical fuel removal. A Fire Management Plan (FMP) would be developed and maintained that would integrate existing federal fire management guidance. Under existing guidelines, all fire suppression activities take into account their potential impacts on cultural resources. Mitigating potential impacts would include coordination with the Native American community in reference to TCPs that might not necessarily be recorded as archaeological resources. Consultation in combination with existing procedures designed to protect the integrity of prehistoric and historic-era cultural resources would result in negligible impacts to documented sites, features, artifacts, and TCPs.

While a broad Ukiah Field Office FMP would provide guidance for long-term fuel and fire management, the very nature of wildfires often necessitates rapid fire-fighting responses. This rapid response cannot always take into account the potentially destructive impacts of fire-fighting on cultural resources. In cases where life and private property are at risk, the use of heavy equipment such as bulldozers has the potential to greatly disturb and destroy documented and unrecorded cultural resources. However, the potential for having to use of such invasive techniques would be lessened over time through the implementation of widespread and active fuel reduction through prescribed burns, grazing, and planned mechanical management in conjunction with clearances provided by BLM archaeologists. Based on the

potential high level of impact associated with fast response firefighting, all of the alternatives would likely provide moderate to major long-term benefits to cultural resources by decreasing the risk of catastrophic fires and potential damage to them from intensive fire suppression operations.

Alternative C is the Preferred Alternative for fire management decisions (prescribed burning and mechanical treatment) throughout the planning area.

4.6.10 Impacts on Cultural Resources from Minerals

Under all alternatives, existing policies regarding mineral development in WSAs would remain the same and would not impact cultural resources in the planning area. The alternatives for energy and/or mineral development relate to where locatable mineral exploration and development or fluid mineral leasing would not be allowed (withdrawal areas). Alternative A (Preferred Alternative for Berryessa, the Geysers, and Scattered Tracts) maintains existing withdrawals for both locatable minerals and fluid mineral leasing. Alternative B proposes additional mineral withdrawal areas in the Cedars ACEC and the Stornetta management area, as well as additional fluid mineral withdrawal areas in the Cache Creek and Cedar Roughs WSAs and the Stornetta management area. Alternatives C (Preferred Alternative for Cache Creek and Cedar Roughs) and D (same as Alternative C) propose even more withdrawal areas/acreage.

For management areas under any alternative that are not withdrawn, impacts from new mineral developments or leasing could include but are not limited to short-term or long-term impacts to cultural resources in the area. Impacts could range from negligible to major and would depend on level of use and duration. Compliance with NEPA may reveal additional impacts.

4.6.11 Impacts on Cultural Resources from Wind Energy

Under all four alternatives, all potential wind energy developments would be subject to Wind Energy BMPs (see Appendix I) that would require projects to avoid, minimize or mitigate impacts to resources and land uses, integrate site design elements with the landscape, create access road siting and management plans, develop "good housekeeping procedures" to keep the site clean, develop measures to ensure safety for visitors, and keep noise to a minimum. These measures would serve to minimize any direct impacts to cultural resources, as the Wind Energy BMPs are required by the BLM. Any projects proposed for public land would be required to conform to BLM guidance regarding the protection of cultural resources. In general, this would include conformance to the Section 106 process. Consequently, impacts to cultural resources on public lands overseen by the Ukiah Field Office would be negligible.

4.6.12 Impacts on Cultural Resources from Travel Management and Route Designation

In light of the obligation on the part of the Ukiah Field Office to adhere to BLM/Section 106 guidance, trail and road maintenance and construction within the management areas would have a negligible impact on cultural resources. However, as additional trails and roadways may be constructed within the management areas as is called for to one degree or another within all of the alternatives, it is the likely increased public access to culturally sensitive areas that has the greatest potential to impact archaeological and traditional cultural sites and materials. It is difficult at best to quantify the degree to which accessibility could impact cultural resources within the planning area. While public access to lands for recreational and other purposes must be maintained possibly with the exception of specially designated

areas, any planning for future roadways and trails must take into consideration the to degree of public access and the proximity to known cultural resources and potentially sensitive areas such as floodplains and riparian environments. In general, archaeologically and culturally important sites, features, and artifacts on lands under Ukiah Field Office administration are accessible in one way or another to the general public and even restrictions placed on allowable patterns of land use, such as eliminating sanctioned OHV access, will not necessarily prevent the most pressing problem facing cultural resources in the planning area; that of illicit artifact collection and looting. On the other hand, providing additional access to potentially sensitive areas and resources could only compound the problem, leading to an adverse impact on the integrity of sites within the management areas.

4.6.13 Impacts on Cultural Resources from Recreation Resources

In general, the variation between alternatives is limited and in most management areas the proportions of areas designated as Primitive, Backcountry, Middlecountry, etc. do not differ between the alternatives. The most notable exceptions occur between alternatives in the Cache Creek area, one of the most archaeologically sensitive within the planning area. Alternatives C (the Preferred for all areas except Knoxville and Berryessa) and D include the shifting of roughly 33,000 acres of property into the Primitive category which, by the restrictions placed on facility construction and access, would inherently serve to protect documented and unrecorded cultural resources contained within this area. In addition, from the preservation perspective, Alternative C would have a more positive effect than Alternative D in that there is nearly double (approximately 33,000 acres vs. 16,000 acres) of lands designated as Middlecountry. Middlecountry lands, although readily accessible to the general public, does not provide for sanctioned motor vehicle access, thereby limiting physical damage potentially resulting from the use of such vehicles and the increased levels of access provided by them. Frontcountry, Rural, and Urban-designated areas, in contract, offer the easiest access and potential for disturbance from construction and landscape modification activities, resulting in higher potential for disturbance to cultural materials and sites (see Travel Management and Route Designation, Section 4.13).

4.6.14 Impacts on Cultural Resources from Soil Resources

In a broad sense, the goals expressed in the alternatives regarding the maintenance of soil resources within the management areas are inherently positive in terms of the protection of cultural resources within the planning area. Monitoring soil conditions and minimizing soil erosion and the sediment load of water courses all serve to preserve the context of documented and unrecorded archaeological materials which are typically found within soil strata. With the exception of, for example, early Native American rock art or historic-era buildings and structures, the scientific and cultural value of archaeological materials rests not only in the information artifacts themselves can provide but most importantly in their context within often stratified soil and sediment deposits. Consequently, BLM efforts at maintaining soil stability would have a positive impact on cultural resources.

4.6.15 Impacts on Cultural Resources from Water Resources

As with the preservation of wildlife and fish habitats, riparian and wetland settings, and soil resources, the preservation and enhancement of water resources entails activities and management perspectives that serve to preserve, maintain, and enhance the natural environment. It is within this environment, particularly in stable soils near water sources and rich floral and faunal distributions, that cultural remains are often situated. Consequently, activities focused on the preservation of water resources and other

inter-related elements such as wildlife habitats and soils, serve to further protect cultural resources; resulting in a generally positive impact.

4.6.16 Potential Cumulative Impacts to Cultural Resources

The cumulative impact study area for cultural resources could be considered not only those lands under Ukiah Field Office administration, but all lands in the vicinity, including those situated between and surrounding the management areas. The RMP would contribute to regional efforts to protect and promote public awareness and appreciation of cultural resources. In particular, many areas within the impact study area lie outside Ukiah planning area bounds and are under private ownership where cultural resource protections are not legally mandated. In light of this lack of required management and preservation, lands subject to Ukiah Field Office jurisdiction contribute a disproportionately large body of protected resources and scientific knowledge in the region. This degree of protection, research focus, and scientific and cultural potential represents a cumulatively major positive impact.

4.7 IMPACTS ON SPECIAL DESIGNATIONS (WILD AND SCENIC RIVERS, WILDERNESS CHARACTERISTIC INVENTORY UNITS, ACECS)

This section focuses on the affects that management actions would have on the suitability of the lands for a respective designation or protective management, and not on the impacts to the resource values themselves. For example, all of the eligible Wild and Scenic River segments that have anadromous fisheries or unique scenic characteristics have "outstandingly remarkable values" that contribute to their eligibility. The impact assessment in this section does not identify impacts from the various programs to the anadromous fisheries or scenic qualities themselves (these are discussed in the VRM and Aquatic Ecosystem and Fisheries sections, respectively), but only their impacts on the eligibility/suitability on the river for the designation. The Draft RMP would have minimal impacts on the inventory units and study areas, and does not include actions that would result in an irreversible or irretrievable impact, i.e., an impact that would make a particular inventory unit or study area unsuitable for consideration for protective management under later land use planning efforts.

4.7.1 Impacts on Special Designations from Special Designations

Beneficial impacts would occur for those areas identified for management according to their respective Congressional or administrative designations/allocations. Currently (Alternative A), the Ukiah Field Office manages 2 WSAs, 3 ACECs, and 3 RNAs, with 95 eligible Wild and Scenic stream segments identified. Under Alternative B, none of the eligible river segments shown in Figure 2-12 would be recommended for inclusion in the NWSRS. This would be a moderate negative impact to the Wild and Scenic Rivers only, as the river segments would not be protected from modification in the future (i.e., stream impoundments, diversions, channelization, and/or rip-rapping to the extent of the law). However, Alternative B augments existing ACEC and WSA acreages in the Knoxville, Indian Valley, Indian Valley, and Cache Creek management areas, as well as establishes ACECs in Stornetta and in the Black Forest (Black Forest). Under Alternative B, long-term beneficial impacts would occur for these areas. Alternatives C and D are the same as Alternative B, with increasing acreages managed in the Knoxville, Indian Valley, and Scattered Tracts ACECs, and Cache Creek WSA. Therefore, additional beneficial impacts would occur under Alternatives C and D as increasing miles of eligible Wild and Scenic

Rivers will be recommended for inclusion in the NWSRS. An increase in designations throughout the Ukiah Field Office will assist in the protection of more lands containing ecological, geological, or other features of scientific, educational, scenic, or historical value.

Areas not proposed for management under these respective designations or land use allocations would not have any long-term impacts under the Draft RMP that would make them ineligible for future consideration.

4.7.2 Impacts on Special Designations from Fire Management

Although the use of heavy equipment is prohibited throughout ACECs, WSAs, and Wild and Scenic River corridors, use may be allowed under special circumstances and minor to moderate short-term impacts would occur to the these special areas from fire management projects. Wildfire suppression management would be modified to protect known values within the ACECs, WSAs, and Wild and Scenic River corridors. Modified suppression techniques would be identified in subsequent activity plans for these critical areas. In the long-term, these projects would serve to create a landscape that more closely approximates natural conditions and is more resistant to catastrophic wildfire. This would serve to increase the naturalness of the units in the long-term.

4.7.3 Cumulative Impacts on Special Designations

In terms of cumulative impacts, these inventory units and study areas contribute to systems of protected lands already in place. For example, a number of wilderness areas have already been designated within 100 miles of the Ukiah Field Office, including the North Fork Wilderness, the Yolla Bolly Middle-Eel Wilderness, and Humboldt Redwoods State Park Wilderness. Additional ACEC, WSA, and Wild and Scenic River acreage will serve to better connect an already fractured natural landscape. Since existing designated lands are often separated by many miles and landforms, the proposed ACECs and Wild and Scenic Rivers in particular would improve connectivity between a variety of protected lands, including the McLaren Reserve, the Cedars, and Blue Ridge.

4.8 IMPACTS ON FOREST MANAGEMENT

Commercial forest lands are found only in the Cow Mountain area, in the Scattered Tracts area west of Highway 101, and the Black Forest. Under the proposed RMP, no timber harvesting would take place and lands would be managed to protect and/or enhance recreational and biological resources. Consequently the impacts on Forest Management from other resource management actions are considered negligible.

4.9 IMPACTS ON LIVESTOCK GRAZING MANAGEMENT

Under all the alternatives, decisions relating to grazing management are constrained by current BLM grazing regulations and the Northwestern California Standards for Rangeland Health and Guidelines for Livestock Management.

4.9.1 Impacts on Livestock Grazing Management from Visual Resources Management

4.9.1.1 Common to All Management Areas

Alternative A would continue to keep allotments in the same VRM classes, or where these have not been designated, would manage visual resources on a case by case basis. There would be no changes from existing management and thus no impacts on grazing management from VRM under Alternative A in any of the management areas. Alternative B (Preferred Alternative for Cow Mountain, Knoxville, Cedar Roughs, and Stornetta) would zone all allotments in Classes II or III, which would not preclude existing grazing management practices or facilities as these are part of the characteristic cultural landscape allotments. Therefore there would be no impact on grazing management from VRM under Alternative B. Alternative C (Preferred Alternative for Indian Valley, Cache Creek, Berryessa, the Geysers, and Scattered Tracts) would also zone all allotments in Classes II or III, with no impact on grazing management. Alternative D would zone all allotments in Classes II, III, or IV, with no impact on grazing resources.

4.9.2 Impacts on Livestock Grazing Management from Wildlife and Fish

4.9.2.1 Common to All Management Areas

The goals and objectives for wildlife and fish that are common to all alternatives and management areas (habitat quality and quantity, public awareness, minimize or eliminate need to list additional species under the ESA and contribute to the recovery of listed species) continue existing policies and are compatible with existing livestock grazing management activities. There would be no impact on grazing management from actions to attain these wildlife and fish goals and objectives. Alternative A would continue current levels of habitat protection and development and would therefore have no impact on grazing management, except in the Stornetta Unit (see below). Under Alternative B (Preferred Alternative for Cache Creek), use of passive management to protect priority habitats would have no impact on grazing management. Activities to provide intermediate levels of habitat protection and development under Alternative C (Preferred Alternative for all other management areas) such as enhancing riparian areas, prescribed burning, noxious weed control and brush conversion are compatible with livestock grazing as practiced under existing BLM policies and would have negligible adverse impacts (except in the Stornetta Unit, see below). These activities could supply additional livestock forage and could therefore have minor long-term beneficial impacts. Activities to provide the highest levels of habitat protection and development under Alternative D such as enhancing riparian areas, prescribed burning, noxious weed control, revegetation with native species and brush conversion are compatible with livestock grazing as practiced under existing BLM policies and would have negligible adverse impacts (except in the Stornetta Unit, see below). Some of these activities (especially brush conversion) could increase the quality and quantity of livestock forage and could therefore have minor long-term beneficial impacts on grazing management.

4.9.2.2 Stornetta

Under Alternative A, Hathaway Creek would be excluded from livestock grazing. However, this area is only 8 acres of the 1,132 acre management area, so the impact on grazing management would be negligible. Under Alternatives C and D, the only grazing use allowed after expiration of the valid existing right would be as a tool for habitat improvement. Because this would be authorized under temporary

subsidized contracts or free use, and livestock use for habitat enhancement is only marginally economical, this would result in the loss of up to 1,600 AUMs of livestock forage, a major long-term localized impact on grazing management. Under Alternative D, livestock use would be curtailed if coastal prairie enhancement can be accomplished without grazing, this would also be a major long-term localized adverse impact on grazing management.

4.9.3 Impacts on Livestock Grazing Management from Vegetation Management

4.9.3.1 Common to All Management Areas

Under all alternatives (Alternative C is the Preferred Alternative) and in all management areas, grazing permittees would be required to use certified weed free straw to prevent introduction of noxious weeds. As most livestock grazing in active leases is not supplemented and use of straw is minimal, this would have a negligible impact on grazing management. In all of the management areas, there would be various levels of prescribed fire. As the vast majority of these areas are unsuitable for livestock grazing because they are too steep, unfenced, inaccessible, support little forage, and/or lack water, this would also have a negligible impact on grazing management. Noxious weed control on management areas that have areas suitable for grazing would affect only a miniscule percentage of those areas, so that would have negligible impacts on grazing management.

4.9.4 Impacts on Livestock Grazing Management from Riparian and Wetland Habitats

4.9.4.1 Common to All Management Areas

Management actions for riparian and wetland resources under Alternative A to allow natural processes to continue and conduct field monitoring would have no impact on grazing resources. Management actions for riparian and wetland resources under Alternative B to reach equilibrium would have no impact on grazing resources. Management actions for riparian and wetland resources under Alternative C (Preferred Alternative) to develop and implement projects to achieve or maintain PFC would have negligible impacts on grazing management because no wetlands, and only small areas along creeks are accessible to livestock and these areas produce minimal amounts of forage and are not required as water sources. If grazing was restricted or excluded in these areas, it would not adversely affect grazing operations. Objectives to mitigate all known issues in wetland/riparian areas that are not in PFC under Alternative D would have negligible impacts for the same reasons as for Alternative C.

4.9.5 Impacts on Livestock Grazing Management from Cultural Resources

4.9.5.1 Common to All Management Areas

Management actions under Alternative A to comply with existing laws, regulations, and policies of preservation and protection for cultural resources would have no impact on grazing resources. Management actions under Alternative B, which would be the same as Alternative A but with increased enforcement patrols and monitoring to protect cultural resources would also have no impact on grazing resources. Management actions under Alternatives C (Preferred Alternative) and D, which would be the same as Alternative B but with increased surveys, overviews, inventories and stabilization projects would have no impacts on grazing management.

4.9.6 Impacts on Livestock Grazing Management from Lands and Realty

4.9.6.1 Cow Mountain

There are currently no active grazing allotments in the Cow Mountain management area, and none proposed for Alternatives A and B, therefore there would be no impacts on grazing management for those alternatives. Under Alternatives C (Preferred Alternative) and D, grazing allotments would be activated in Cow Mountain. However, as new rights of way would be located within or adjacent to existing rights of way for those alternatives, impacts from land use authorization on grazing management would be negligible. Public lands are identified for retention and no disposal under Alternatives C and D, and exchanges or acquisitions could be made to enhance management actions; therefore land tenure under those alternatives could have a minor to moderate long-term beneficial impact on grazing management.

4.9.6.2 Knoxville

There are two active grazing allotments in the Knoxville management area, which would remain active under Alternatives A, C (Preferred Alternative), and D. Because new rights of way would be located within or adjacent to existing rights of way for those alternatives, impacts from land use authorization on grazing management would be negligible. Because the active allotments would become unavailable to livestock grazing under Alternative B, there would be no long-term impact from land use authorization or land tenure. Public lands are identified for retention and no disposal under all the alternatives and exchanges or acquisitions could be made to reduce fragmentation or enhance management actions; therefore land tenure under those alternatives could have a minor to moderate long-term beneficial impact on grazing management.

4.9.6.3 Indian Valley

There is only one small active grazing allotment in the Indian Valley management area, which would remain active under Alternatives A, and be closed to grazing under Alternatives B and C (Preferred Alternative). The entire management area would be open to grazing Under Alternative D, but only the existing Allotment is suitable for grazing. Because of the small area and amount of forage in this allotment, there would be no impacts from lands and realty under any of the alternatives.

4.9.6.4 Cache Creek

There are no active grazing allotments in this management area under any of the alternatives (Alternative C is the Preferred Alternative), thus no impacts on grazing management from lands and realty.

4.9.6.5 Cedar Roughs

There is only one small active grazing allotment in the Cedar Roughs management area, which would remain active under Alternative A, and be closed to grazing under Alternative B. The entire management area would be closed to new leases but open to contract grazing Under Alternative C (Preferred Alternative), and open to new leases under Alternative D but only the existing Allotment is suitable for grazing. Because of the small area and amount of forage in this allotment, there would be no impacts from lands and realty under any of the alternatives.

4.9.6.6 Berryessa

There are two active grazing allotments in the Berryessa management area, which would remain active under Alternatives A, and be closed to grazing under Alternative B. The entire management area would be closed to new leases but open to contract grazing. Under Alternative C (Preferred Alternative), and open to new leases under Alternative D. Because new rights of way would be located within or adjacent to existing rights of way for those alternatives, impacts from land use authorization on grazing management would be negligible. Because the active allotments would become unavailable to livestock grazing under Alternative B, there would be no long-term impact from land use authorization or land tenure. Public lands are identified for retention and no disposal under all the alternatives and exchanges or acquisitions could be made to reduce fragmentation or enhance management actions; therefore land tenure under those alternatives could have a minor to moderate long-term beneficial impact on grazing management.

4.9.6.7 Stornetta

Because new rights of way would be located within or adjacent to existing rights of way for all the alternatives (Alternative C is the Preferred Alternative), impacts from land use authorization on grazing management would be negligible. Public lands are identified for retention and no disposal under all the alternatives, so there would be no impact on grazing management from land tenure.

4.9.6.8 Geysers

There are no active grazing allotments in this management area under any of the alternatives (Alternative C is the Preferred Alternative), thus no impacts on grazing management from lands and realty.

4.9.6.9 Scattered Tracts

There are two small active grazing allotments in the Scattered Tracts, which would remain active under Alternatives A and C, and D. Additional areas in the entire management area would be open to grazing Under Alternative D, but only small former leases are suitable for grazing. Because new rights of way would be located within or adjacent to existing rights of way for those alternatives, impacts from land use authorization on grazing management would be negligible. Because the active allotments would become unavailable to livestock grazing under Alternative B (Preferred Alternative), there would be no long-term impact from land use authorization or land tenure. Public lands are identified for retention and no disposal under all the alternatives and exchanges or acquisitions could be made to reduce fragmentation or enhance management actions; therefore land tenure under Alternatives A, C, and D could have a minor long-term beneficial impact on grazing management.

4.9.7 Impacts on Livestock Grazing Management from Special Designations

4.9.7.1 Cow Mountain

There are no proposed special designations for Cow Mountain under any of the alternatives (Alternative C is the Preferred Alternative), therefore there would be no impact on grazing management.

4.9.7.2 Knoxville

There would be no changes in special designations under Alternative A, therefore no impact on grazing management. Under Alternative B, a 1,756 acre Knoxville ACEC would be established to protect unique serpentine plant communities, soils, and seeps. A portion of this ACEC would overlap with the Jericho Valley grazing allotment along a small reach of Hunting Creek. If the goals of the ACEC are found not to be compatible with grazing and it was excluded from Hunting Creek, that would result in very small loss of forage as it is such a small percentage of that allotment, resulting in a minor localized impact on grazing management. If grazing was restricted or limited along Hunting Creek to attain ACEC goals, that would result in negligible localized impacts. If there were no changes to grazing management along Hunting Creek as a result of special designations, there would be no impact. Under Alternative C (Preferred Alternative), the Knoxville ACEC would be established at 5,236 acres, and it would overlap with the Jericho Valley Allotment along the same stretch of Hunting Creek as Alternative B, but it would also overlap with the Allotment in the western extent of the Cedars and near Cedar Creek, consisting of about one quarter of the allotment. If the goals of the ACEC are found not to be compatible with grazing and it was eliminated in those areas, it would result in a moderate localized impact on grazing management. If grazing was restricted or limited to attain ACEC goals, that could result in negligible to moderate localized impacts. If there were no changes to grazing management as a result of special designations, there would be no impact. Under Alternative D, the entire Knoxville management area would be designated as an ACEC. If the goals of the ACEC are found not to be compatible with grazing and it was eliminated from all of the Cement Creek and Jericho Valley Allotments, that would result in the loss of 420 AUMs, a major localized impact on grazing management. If grazing was restricted or limited to attain ACEC goals, that could result in negligible to moderate localized impacts. If there were no changes to grazing management as a result of conflicts with Knoxville ACEC goals, there would be no impact.

4.9.7.3 Indian Valley

There are no proposed special designations in Indian Valley (specifically the Indian Valley Brodiaea ACEC) that overlap with any active grazing allotments, so there would be no impact on grazing management (Alternative C is the Preferred Alternative).

4.9.7.4 Cache Creek

There are no grazing allotments that overlap with the Cache Creek WSA or the proposed Cache Creek Wild and Scenic River, so there would be no impacts on grazing management from the proposed actions under any alternative (Alternative C is the Preferred Alternative).

4.9.7.5 Cedar Roughs

There are no grazing allotments that overlap with the any special designations, specifically the existing Cedar Roughs ACEC, so there would be no impacts on grazing management from Alternative A. Also, the proposed expansion of the Cedar Roughs ACEC does not overlap with existing grazing allotments, so there would be no impact under Alternatives B (Preferred Alternative), C, and D.

4.9.7.6 Berryessa

There are no proposed special designations for Berryessa under any of the alternatives (Alternative A is the Preferred Alternative), therefore there would be no impact on grazing management.

4.9.7.7 Stornetta

The Stornetta ACEC which is proposed under all the alternatives would recognize livestock grazing as an existing right and it would be an authorized use, therefore there would be no impact on grazing management in the short-term or over the next ten years. After that period, if the goals of the ACEC are found not to be compatible with grazing and it was eliminated that would result in the loss of 1,200 AUMs, a major localized impact on grazing management. If grazing was restricted or limited to attain ACEC goals, that could result in negligible to moderate localized impacts. If there were no changes to grazing management as a result of special designations, there would be no impact. Designation of the Garcia River as a Wild and Scenic River under Alternatives C (Alternative C is the Preferred Alternative) and D could require that livestock grazing be limited or excluded from the river banks. If water could be supplied elsewhere, the loss of forage would be a small portion of that available on the rest of the allotment, resulting in a minor localized impact on grazing management. Designation of Hathaway Creek as a Wild and Scenic River under Alternative D would result in only negligible impacts as it covers only about 8 acres of the 1,132 acre allotment.

4.9.7.8 Geysers

There are no proposed special designations for Geysers under any of the alternatives (Alternative C is the Preferred Alternative), therefore there would be no impact on grazing management.

4.9.7.9 Scattered Tracts

There are no grazing allotments that overlap with the any proposed special designations, (Quail Ridge, Blue Ridge ACECs) so there would be no impacts on grazing management from any of the alternatives (Alternative C is the Preferred Alternative).

4.9.8 Impacts on Livestock Grazing Management from Forest Management

4.9.8.1 Common to All Management Areas

As there are no commercial forests that coincide with any active grazing allotments or any areas suitable for livestock grazing, there would be no impact on grazing management from forest management (Alternative A is the Preferred Alternative).

4.9.9 Impacts on Livestock Grazing Management from Livestock Grazing Management

4.9.9.1 Common to All Management Areas

Under all the alternatives in all management areas, livestock use would be allowed outside of active leases for weed control, maintenance of fire lines or prescribed burns, and/or hazardous fuels reduction. Because this would be authorized under temporary contracts, and contracted livestock use for weed control or fuels management is only marginally economical, there would therefore be negligible short and

long-term impacts on grazing management. Under Alternative D, areas burned in wildfires in all management areas would be available for grazing after a minimum of two growing seasons. This could provide an unknown but likely small number of additional AUMs of forage (because most wildfires would be in areas unsuitable for livestock grazing because of steep terrain and/or lack of water), resulting in negligible to minor long-term beneficial impacts on grazing management.

4.9.9.2 Cow Mountain

Under existing conditions and Alternatives A (Preferred Alternative) and B, there would be no active grazing leases on Cow Mountain, therefore no impacts on grazing management. Under Alternative C, portions of former leases and other oak woodlands or grasslands would be available for livestock grazing. Under Alternative D, all public lands in Cow Mountain would be available for livestock grazing; however, because the only suitable grazing lands are the former leases and other oak woodlands or grasslands, this alternative would in practice have the same effect as Alternative C. Alternatives C and D would provide approximately an additional 80 AUMs of grazing, which would result in a minor localized long-term beneficial impact on grazing management.

4.9.9.3 Knoxville

Under Alternatives A and C (Preferred Alternative), Cement Creek and Jericho Allotments would remain active, resulting in no impact on grazing management. Under Alternative B, those two allotments would become unavailable for livestock grazing upon relinquishment of current leases or sale of base property. This would remove approximately 420 AUMs of forage from use, resulting in minor localized long-term adverse impacts on grazing management. Under Alternative D, the two allotments would remain active, and the remainder of the management area would become available for livestock grazing. However, because most of the Area is unsuitable for grazing, this would add only about an additional 95 AUMs of forage in former leases, resulting in a minor localized long-term beneficial impact on grazing management.

4.9.9.4 Indian Valley

Under Alternatives A and C (Preferred Alternative), the Salt Lick Canyon lease would remain active, resulting in no impact on grazing management. Under Alternative B, that allotment would become unavailable for livestock grazing upon relinquishment of current leases or sale of base property. This would remove approximately 6 AUMs of forage from authorized use, and would probably result in grazing trespass from adjacent unfenced private land, causing a minor localized long-term adverse impact on grazing management. Under Alternative D, the Salt Lick Canyon allotment would remain active, and the remainder of the management area would become available for livestock grazing. However, because most of the Area is unsuitable for grazing, this would add only about an additional 100 AUMs of forage in former leases, resulting in a minor localized long-term beneficial impact on grazing management.

4.9.9.5 Cache Creek

Under all the alternatives (Alternative A is the Preferred Alternative), there would be no active leases in the Cache Creek management area, resulting in no change and no impact on grazing management.

4.9.9.6 Cedar Roughs

Under Alternatives A and C (Preferred Alternative), the Maxwell Creek lease would remain active, resulting in no impact on grazing management. Under Alternative B, that allotment would become unavailable for livestock grazing upon relinquishment of current leases or sale of base property. This would remove approximately 6 AUMs of forage from authorized use, and would probably result in grazing trespass from adjacent unfenced private land, causing a minor localized long-term adverse impact on grazing management. Under Alternative D, the Maxwell Creek allotment would remain active, and the remainder of the management area would become available for livestock grazing. However, because most of the area is unsuitable for grazing, this would add only about an additional 80 AUMs of forage in a former allotment, resulting in a minor localized long-term beneficial impact on grazing management.

4.9.9.7 Berryessa

Under Alternative A, the Rocky Ridge and Portuguese Canyon leases would remain active, resulting in no impact on grazing management. Under Alternative B, those allotments would become unavailable for livestock grazing upon relinquishment of current leases or sale of base property. This would remove 203 AUMs of forage from use, causing a minor localized long-term adverse impact on grazing management. Under Alternative C (Preferred Alternative), the Rocky Ridge allotment would remain active, and the Portuguese Canyon allotment would become unavailable for livestock grazing upon relinquishment of current leases or sale of base property. This would remove approximately 83 AUMs of forage resulting in a minor localized long-term adverse impact on livestock management. Under Alternative D, the entire management area would become available for livestock grazing. However, because none of the Area outside of the active leases is suitable for grazing, this would not add any additional forage, resulting in no impact on grazing management.

4.9.9.8 Stornetta

Under all the alternatives, the unit would remain available for livestock grazing until July 1, 2014, resulting in no short-term impacts on grazing management. Under Alternatives A and B, grazing would only be allowed as a tool for weed control or fuels management during the assessment period. Because a total of up to 1,600 AUMs of forage would be lost, this would result in a major localized long-term impact on grazing resources. Under Alternative C (Preferred Alternative), at termination or expiration of the existing lease, the area would be considered for livestock grazing, subject to regulation and policy after consultation with affected agencies and the public. If it was determined that grazing could be allowed after the consultation, there would be no impact. If it was determined that grazing should not be allowed, a total of 1,600 AUMs of forage would be lost, resulting in a major localized long-term impact on grazing resources. Under Alternative D, the area would remain available for livestock grazing after termination or expiration of the grazing lease, and grazing management would be improved by implementing an Allotment Management Plan and constructing facilities for uniform utilization and maximum forage production. This would result in a localized long-term moderate beneficial impact on grazing resources.

4.9.9.9 Geysers

Under all the alternatives, there would be no active grazing leases in the Geysers management area, as is the case currently, so there would be no impact on grazing management (Alternative A is the Preferred Alternative).

4.9.9.10 Scattered Tracts

Under Alternatives A and C (Preferred Alternative), the Salt Creek and Richter leases would remain active, resulting in no impact on grazing management. Under Alternative B, those allotments would become unavailable for livestock grazing upon relinquishment of current leases or sale of base property. This would remove 33 AUMs of forage from use, causing a minor localized long-term adverse impact on grazing management. Under Alternative D, the Richter Allotment would remain available for livestock grazing but the Salt Creek Allotment would be proposed for disposal. This allotment would likely continue to be grazed under private ownership, resulting in no impacts on grazing management. Also under Alternative D, areas that are not designated for disposal would be available for livestock grazing. Areas that are designated for disposal would be available for temporary livestock grazing, while the lands are in public ownership. However, the only areas suitable for grazing in both of these categories would only supply an additional 38 AUMS of grazing in 2 former allotments, resulting in a minor long-term localized beneficial impact.

4.9.10 Impacts on Livestock Grazing Management from Fire Management

4.9.10.1 Common to All Management Areas

In all of the management areas, continuation of activities for FMP, fire suppression, and fuels management under all of the alternatives (Alternative C is the Preferred Alternative for all management areas) would have no impacts on livestock management. Under all the alternatives there would be various levels of prescribed fire. As the vast majority of these areas are unsuitable for livestock grazing because they are too steep, unfenced, inaccessible, support little forage, and/or lack water, this would have a negligible impact on grazing management.

4.9.11 Impacts on Livestock Grazing Management from Minerals

4.9.11.1 Common to All Management Areas

Under all the alternatives, lands in the Ukiah Field Office are generally available for withdrawal for mineral development, with the exception certain closures under Alternatives B, C, and D (see Appendices F, G, and H for mineral RFDs). Since there would either be no change in existing policies or increased protection, and existing laws, regulations, and policies would continue to protect grazing resources, there would be no impact from minerals on grazing management under any of the alternatives in any of the management areas.

4.9.12 Impacts on Livestock Grazing Management from Wind Energy

4.9.12.1 Common to All Management Areas

The potential areas for development (see Appendix J, Wind Energy RFD) are Berryessa, Indian Valley/Walker Ridge, Knoxville, and Geysers. Only Berryessa and Knoxville currently have grazing allotments within areas identified with potential for wind energy development. However, under each alternative, wind energy development projects proposals on public lands managed by the Ukiah Field Office, which are not in exclusion areas, would be considered through ROW grants, in accordance with the FLMPA and BLM policy. These policies would protect grazing management resources in all the management areas, therefore no impacts on grazing management from renewable energy are expected.

Alternative B is the Preferred Alternative for wind energy management decisions in Cow Mountain, Cache Creek, Cedar Roughs, Stornetta, the Geysers, and the Scattered Tracts. Alternative D is the Preferred Alternative for the Knoxville, Indian Valley, and Berryessa management areas.

4.9.13 Impacts on Livestock Grazing Management from Travel Management and Route Designation

4.9.13.1 Common to All Management Areas

Grazing allotments in all management areas except for Stornetta and Cow Mountain are either inaccessible to the public or receive little or no public use. Impacts on grazing management from travel management and access are therefore expected to be negligible.

Alternative A is the Preferred Alternative for travel management and access decisions in Cache Creek, Cedar Roughs, and Berryessa. Alternative B is the Preferred Alternative for the Indian Valley management area. Alternative C is the Preferred Alternative in Cow Mountain, Knoxville, Stornetta, the Geysers, and the Scattered Tracts.

4.9.13.2 Cow Mountain

Under existing conditions and Alternatives A and B, there would be no active grazing leases on Cow Mountain, therefore no impacts on grazing management from travel management and access. Under Alternative C, portions of former leases and other oak woodlands or grasslands would be available for livestock grazing. Under Alternative D, all public lands in Cow Mountain would be available for livestock grazing; however, because the only suitable grazing lands are the former leases and other oak woodlands or grasslands, this alternative would in practice have the same effect as Alternative C. The adverse impacts of travel management and access on livestock management under Alternatives C and D in South Cow Mountain could be major in the long and short-term because of conflicts between motorized OHV access and livestock management. Impacts on livestock management in North Cow Mountain would be minor in the short and long-term because of conflicts between livestock management and non-motorized or mechanized access.

4.9.13.3 Stornetta

Under all the alternatives, the unit would remain available for livestock grazing until July 1, 2014; conflicts between public access and livestock management during this period could be negligible to minor. Under

Alternatives A and B, grazing would only be allowed as a tool for weed control or fuels management during the assessment period. This would be such a limited use that conflicts would result in negligible impacts. Under Alternative C, at termination or expiration of the existing lease, the area would be considered for livestock grazing, subject to regulation and policy after consultation with affected agencies and the public. If it was determined that grazing could be allowed after the consultation, impacts on livestock management from travel management and access would remain negligible to minor. If it was determined that grazing should not be allowed, there would be no impact on livestock management from travel management and access. Under Alternative D, the area would remain available for livestock grazing after termination or expiration of the grazing lease, and grazing management would be improved by implementing an Allotment Management Plan and constructing facilities for uniform utilization and maximum forage production. This could result in increased conflicts resulting in localized long-term minor to moderate impacts on grazing management from travel management and access.

4.9.14 Impacts on Livestock Grazing Management from Recreation

4.9.14.1 Common to All Management Areas

Grazing allotments in all management areas except for Stornetta and Cow Mountain are either inaccessible to the public or receive little or no public use. Impacts on grazing management from recreation in these areas are therefore expected to be negligible.

Alternative C is the Preferred Alternative for recreation management decision in all management areas, except Knoxville and Berryessa. The Preferred Alternative for Knoxville and Berryessa is Alternative A.

4.9.14.2 Cow Mountain

Under existing conditions and Alternatives A and B, there would be no active grazing leases on Cow Mountain, therefore no impacts on grazing management from recreation. Under Alternative C, portions of former leases and other oak woodlands or grasslands would be available for livestock grazing. Under Alternative D, all public lands in Cow Mountain would be available for livestock grazing; however, because the only suitable grazing lands are the former leases and other oak woodlands or grasslands, this alternative would in practice have the same effect as Alternative C. The adverse impacts of recreation on livestock management under Alternatives C and D in South Cow Mountain could be moderate to major in the long and short-term because of conflicts between motorized OHV access and livestock management. Impacts on livestock management from recreation in North Cow Mountain would be minor in the short and long-term because of conflicts between non-motorized and mechanized access.

4.9.14.3 Stornetta

Under all the alternatives, the unit would remain available for livestock grazing until July 1, 2014; conflicts between recreation and livestock management during this period would be expected to be negligible to minor and localized. Under Alternatives A and B, grazing would only be allowed as a tool for weed control or fuels management during the assessment period. This would be such a limited use that conflicts with recreation would result in negligible impacts in the long-term on grazing management. Under Alternative C, at termination or expiration of the existing lease, the area would be considered for livestock grazing, subject to regulation and policy after consultation with affected agencies and the public. If it was determined that grazing could be allowed after the consultation, impacts on livestock management from recreation would remain minor and localized. If it was determined that grazing should

not be allowed, there would be no impact on livestock management from recreation. Under Alternative D, the area would remain available for livestock grazing after termination or expiration of the grazing lease, and grazing management would be improved by implementing an Allotment Management Plan and constructing facilities for uniform utilization and maximum forage production. This could result in increased conflicts resulting in localized long-term minor to moderate impacts on grazing management from recreation.

4.9.15 Impacts on Livestock Grazing Management from Soil Resources

4.9.15.1 Common to All Management Areas

All the alternatives would continue current management actions to minimize erosion and maintain or improve soil resources. Current management actions would include conformance to Northwestern California Standards for Rangeland Health and Guidelines for Livestock Management, which includes guidelines to meet soil resource objectives. Alternatives C (Preferred Alternative for all management areas) and D indicate special conditions for Stornetta (see below) that would require adjustments in management or allowable use if monitoring detects negative impacts on soils. However, that is just a clarification for Stornetta on the current management actions, which are common to all management areas. Preliminary and final Rangeland Assessments have indicated that all rangeland standards (including soils) have been met in all the allotments (including Stornetta). There would therefore be no impacts on grazing management from soil resources for any alternatives in any management areas.

4.9.16 Impacts on Livestock Grazing Management from Water Resources

4.9.16.1 Common to All Management Areas

Under all the alternatives in all management areas, current management actions would include conformance to Northwestern California Standards for Rangeland Health and Guidelines for Livestock Management, which includes guidelines to meet water resource objectives. If monitoring determines that these objectives are not being attained, the livestock grazing operation to protect and restore aquatic resources. Because this is a continuation of existing actions, there would be no impact on grazing management from water resources under any of the alternatives. None of the other activities proposed for water resources under any of the alternatives would impact grazing management (Alternative C is the Preferred Alternative for all management areas).

4.9.17 Impacts on Livestock Grazing Management from Air Quality

4.9.17.1 Common to All Management Areas

Because under all the alternatives, air quality management activities would continue as they are currently, there would be no impact on grazing management.

Alternative A is the Preferred Alternative for water resources decisions throughout the planning area.

4.9.18 Potential Cumulative Impacts to Livestock Grazing Management

Grazing management is a relatively minor component of land uses in the region, and the vast majority of it is on private land. Cumulative impacts on grazing management are therefore expected to be negligible.

4.10 IMPACTS ON FIRE MANAGEMENT

Under all alternatives, the Fire Management program and its related activities are guided and constrained by existing fire management policies contained in the current National Fire Plan, BLM national regulation, state directives, and supplemented by cooperative agreements. The Resource Management Plan for the Ukiah Field Office provides further specific direction, guidelines and constraints. All wildfires receive an appropriate management suppression response based upon safety and resource values at risk.

Impacts to Fire Management are best described by reflecting the changes in acreages burned in prescribed fire applications. These applications are executed by fire management for the purpose of accomplishing fuel hazard reduction as well as other resource management direction, typically wildlife and vegetation habitat improvement. The amount of burning undertaken may not appear to be substantial when considered on an annual basis but cumulatively the effects from executing an annual prescribed fire program does provides for long-term benefits such as reductions in fuel loading, lessening of fire intensity, improved wildlife habitat, and the maintenance of healthy vegetative conditions. Current vegetative conditions are identified as being in Condition Classes 2 and 3. Long-term effects from prescribed fire applications would bring the vegetation into Condition Class 1. Wildfire would resume its more natural role in the environment.

Large wildfires burn with great intensity and result in serious and often destruction of human property and life; losses in air, soil and water quality; destruction to fish and wildlife habitat; losses to cultural resources, recreational opportunities, and visual quality. These type wildfires are more difficult to control and generate substantial volumes of smoke and pollutant material during the life of the incident. Smoke columns drift in the direction of prevailing winds and may extend miles beyond the immediate fire location. Heavy smoke conditions can pose health problems for people with respiratory and allergenic conditions. Prescribed fire projects have the potential to have similar affects as wildfires, but fire intensity, volume of smoke, and time of duration are substantially lessened. To reduce the potential health risks from prescribed burns, projects are implemented in consultation with local air quality management districts. The duration for a prescribed fire is about 1 to 3 days in contrast to large wildfires, which last for longer periods, often burning for a 5 to 10 day period.

4.10.1 Impacts on Fire Management from Visual Resources Management

4.10.1.1 Common to All Management Areas

Under all alternatives, the VRM program will have no impacts on the Fire Management program. The probability of large damaging wildfires may have a moderate to major effect on VRM classification but would be a short-term period of five years or less.

4.10.2 Impacts on Fire Management from Wildlife and Fish

4.10.2.1 Common to All Management Areas

Under all alternatives, the existing policies of the Wildlife and Fish management program for habitat protection of aquatic and terrestrial species will remain in place. The constraints found in these policies are considered in the current suppression and fuels management programs and would be continued under implementation of any proposed alternative. These constraints pose a negligible impact to the Fire Management program. Under Alternatives C and D, the fuels management program activities would provide beneficial long-term effects that enhance vegetative conditions favorable for wildlife habitat improvement. Using prescribe fire also results in a reduction of hazardous fuel conditions. A benefit to Fire Management is the change in vegetative conditions from the current Condition Class 2 and 3 to Condition Class 1, a more historical Fire Regime.

Alterative C is the Preferred Alternative for wildlife and fish management decisions in all management areas, except Cache Creek. Alternative B is the Preferred Alternative in the Cache Creek management area.

4.10.3 Impacts on Fire Management from Vegetation Management

4.10.3.1 Common to All Management Areas

Under all alternatives (Alternative C is the Preferred Alternative), Fire Management executes prescribed fires in response to vegetation management direction. These managed fires provide benefits to the fire management program by reduction of existing fuel loads. Prescribed fire also is beneficial in vegetation management when used to assist in the control of noxious weeds. A benefit to Fire Management is the potential change from the current Condition Class 2 and 3 ratings toward Condition Class 1, a more historical fire regime. There is negligible impact to the Fire Management program.

4.10.4 Impacts on Fire Management from Riparian and Wetland Habitats

4.10.4.1 Common to All Management Areas

Under all alternatives (Alternative C is the Preferred Alternative), the existing policies for managing riparian and wetland resource areas will remain in place for restoring and maintaining the ecological health of these areas. The constraints found in these policies are considered in the current suppression and fuels management programs, and would be continued under implementation of any proposed alternative. There is negligible impact to the Fire Management program.

4.10.5 Impacts on Fire Management from Lands and Realty

4.10.5.1 Common to All Management Areas

Under all alternatives, the Lands and Realty management program will have no impacts on the Fire Management program. Alternative C is the Preferred Alternative for lands and realty decisions, with the exception of the Scattered Tracts. Alternative B is the Preferred Alternative for the Scattered Tracts management areas.

4.10.6 Impacts on Fire Management from Special Designations

4.10.6.1 Common to All Management Areas

Under all alternatives, the Special Designations program will have negligible impact on the Fire Management program. Policies and constraints associated with values at risk for Special Designation areas are considered in the current suppression and fuels management programs and would be continued under implementation of any proposed alternative.

Alternative C is the Preferred Alternative for special designations management decisions in all management areas, except Cedar Roughs, Berryessa, and the Geysers. The Preferred Alternative for Berryessa and the Geysers is Alternative A, while Alternative B is preferred for Cedar Roughs.

4.10.7 Impacts on Fire Management from Forest Management

4.10.7.1 Common to All Management Areas

Under all alternatives, the Forest Management program will have no impacts on the Fire Management program. Timber harvesting is driven by a variety of factors including timber value, thinning for forest enhancement including the reduction of fuel loads, and salvage for the removal of dead or dying trees. The majority of the forested lands occur within the Scattered Tracts. These forests are not managed for production but for their wildlife values. Reduction of fuels is not likely necessary within most of the forests; however in some instances along areas which occur or may occur within the urban interface, management may be required in the future.

4.10.8 Impacts on Fire Management from Livestock Grazing Management

4.10.8.1 Common to All Management Areas

Under all alternatives, the Livestock Grazing Management program will have no impacts on the Fire Management program. The reduction of fuel volumes as a result of cattle grazing in pasture and grasslands does provide short-term benefit to Fire Management. Alternative A is the Preferred Alternative for livestock grazing management decisions in Cow Mountain, Cache Creek, and the Geysers. Alternative C is the Preferred Alternative in all other management areas.

4.10.9 Impacts on Fire Management from Fire Management

4.10.9.1 Common to All Management Areas

Under all alternatives, existing policies would remain in place. There are no impacts on the Fire Management program. A FMP would be completed incorporating management direction changes that may result from the current resource management planning efforts. Under all alternatives, human caused fires would be suppressed using an appropriate response based upon firefighter safety and values at risk. Prescribed burning is used to reduce fuels, enhance wildlife habitat, and control noxious plants. Prescribed burning and maintenance of the fuel break system combine to enhance protection for the WUI. A benefit to Fire Management would be brought about by vegetative conditions currently identified as Condition Class 2 and 3 to Condition Class 1. Wildfire would be able to resume its more natural role in the environment.

4.10.9.2 Cow Mountain

Under Alternatives A and B, up to 250 acres would be treated annually with prescribed fire. Applying the lowest Fire Regime Return Interval for Group III (35 years), this would result in a maximum of 8,750 acres, or approximately 16 percent of the total area of Cow Mountain, treated in a 35 year period. The remaining areas would continue to mature and be classified as Condition Class 2 or 3, depending on the age of the chaparral (assuming chaparral coverage of 100 percent) since the last fire interval. Under these alternatives, over 80 percent of the area would remain in Condition Class 2 or 3. The potential for catastrophic wildfire would remain high in these areas

In Alternatives C (Preferred Alternative) and D, up to 1,000 acres would be treated by prescribed fire annually. Up to 35,000 acres, or over 60 percent of the total area, would be treated over a 35 year period. Under these alternatives, a majority of the area would change from Condition Class 2 to Condition Class 1. Although wildfires could continue to occur, the intensity and potential for catastrophic fire is significantly reduced in these alternatives.

4.10.9.3 Knoxville

Up to 50 acres of fuels treatments per year are proposed under Alternatives A and B. As used under Cow Mountain, the 35 year fire treatment period would leave less than 10 percent treated over that period. Ninety percent of the area would have no change in the fuel load component for this management area. There would be little change in the current Condition Class 1 or 2. The potential risk for catastrophic wildfire would remain high.

Under Alternatives C (Preferred Alternative) and D the annual average acreage to be treated with prescribed fire would be up to 400 acres. Based on the 35 year fire treatment period, 14,000 acres could be treated, leaving around 40 percent of the management area untreated.. A majority of the area would be at Condition Class 1 and would reduce the threat from potential catastrophic wildfire. Wildfire would be able to resume its more natural role in the environment..

4.10.9.4 Indian Valley

Under Alternatives A and B, up to 150 acres would be treated annually with prescribed fire. On a 35 year fire treatment cycle, just over 10 percent of the management area would be treated. This would result little vegetative change would occur (assuming no other fires occur) and the Condition Class would stay the same or continue toward Condition Class 3. The potential for catastrophic wildfire would remain high.

Under Alternatives C (Preferred Alternative) and D, it is proposed to treat an annual average of up to 600 acres with prescribed fire. Based on the 35 year fire treatment, 30 percent of the management area would move to Condition Class 1. Although wildfires could continue to occur, the intensity and potential for catastrophic fire is significantly reduced in these alternatives.

4.10.9.5 Cache Creek

Under Alternatives A and B propose to treat up to 250 acres annually with prescribed fire. Twelve percent of the management area would be treated over the 35 year treatment cycle. The change from the current vegetative that is in Condition Class 2 into Condition Class 1 would be limited.

Under Alternatives C (Preferred Alternative) and D, the annual prescribed fire treatment would be up to 1,000 acres. This scenario would leave half of the vegetation in the management area, over the 35 year treatment cycle, moving from Condition Class 2 into Condition Class 1. These vegetative changes would reduce the threat from potential catastrophic wildfire.

4.10.9.6 Cedar Roughs

Alternatives A and B propose treating 10 acres of vegetation annually with fire. The 350 acres treated over 35 years would treat 5 percent of the management area. The majority of the management area is Condition Class 1 and the result would be negligible. The vegetation may continue to Condition Class 2 should no other fires occur. The result of such efforts allows for fire to resume its more natural role in the environment.

Under Alternative C (Preferred Alternative), up to 100 acres would be treated with prescribed fire. Over the 35 fire cycle, over 50 percent of the management area would be treated. The result would be no change in Condition Class 1 for the majority of the management area.

Under Alternative D, it is proposed to treat 200 acres annually with prescribed fire. Based on a 35 year treatment cycle, 7,000 acres would be treated, leaving no acres untreated (100 percent treatment). This would result in no change in Condition Class 1.

4.10.9.7 Berryessa

Fifty acres of fuels treatments are proposed under Alternatives A and B. Over the 35 year cycle, 1,750 acres of vegetation would be treated, resulting in the treatment of over 11 percent of the management area. Few changes would occur in the fuel load component from the current Condition Classes 1 and 3. The potential risk for catastrophic wildfire would remain high.

Under Alternatives C (Preferred Alternative) and D, 250 acres of prescribed burning would result in 8,750 acres treated over the 35 year fire cycle. Nearly 60 percent of the area would be at Condition Class 1 for that period. The reduction of catastrophic fire would be significantly reduced.

4.10.9.8 Stornetta

No acreages of fuels treatments are proposed under Alternatives A and B. No changes would occur in the fuel load component for this management area. There would be no change in the current Condition Classes 2, though the risk of catastrophic wildfire is low due to the vegetation composition of the management area (predominantly grassland/meadow).

Under Alternative C (Preferred Alternative), it is proposed to treat 10 acres annually, resulting in 350 acres or 30 percent of the vegetation treated over the 35 year fire cycle. This would result in a change in

Condition Class 2 trending toward Condition Class 1, though the risk of catastrophic wildfire would still remain low.

Alternative D proposes treating up to 25 acres of vegetation annually with prescribed fire. The result over the 35 year fire cycle would be 875 acres treated or 77 percent of the management area treated. The reduction of fuel loads would be greater and the result would be little threat of catastrophic wildfire as the majority of the management area would be at Condition Class 1.

4.10.9.9 Geysers

Alternatives A and B propose treating up to 25 acres of vegetation per year. Over the 35 year fire cycle 875 acres would be treated resulting in just over 12 percent of the management area treated. Minimal change would occur form the current Condition Class 2 toward Condition Class 1, resulting in the continued potential risk for catastrophic wildfire to remain relatively high.

Under Alternative C (Preferred Alternative), up to 100 acres of fuels treatment are proposed. The result over the 35 year fire cycle would be the treatment of 3,500 acres of vegetation or approximately 50 percent of the management area treated. This would result a major change from Condition Class 2 to Class 1. The risk of catastrophic wildfire is substantially reduced.

Under Alternative D, up to 200 acres are proposed for treatment annually. This would result in 7,000 acres of vegetation treated leaving virtually no acres untreated (100 percent treatment). The management area would be at Condition Class 1 and the risk of catastrophic wildfire would be significantly reduced.

4.10.9.10 Scattered Tracts

The small size and scattered land ownership pattern makes implementing prescribed burns within this unit very difficult. Alternatives A and B propose treating up to 100 acres of vegetation annually resulting in 3,500 acres treated over the 35 year fire cycle. Approximately 7 percent of the management area would be treated over this time and the change in Condition Class 3 toward class 1 would be minimal. The potential risk for catastrophic wildfire would remain high.

Under Alternative C (Preferred Alternative), up to 250 acres of fuel treatment would occur annually. Over the 35 year fire treatment cycle 8,750 acres or 19 percent of the management area would be treated. Eighty percent of the management area would continue to be at Condition Class 3 and the potential risk for catastrophic wildfire would remain relatively high

Under Alternative D, up to 400 acres per year is proposed for treatment. The result over the 35 year fire cycle would be 14,000 acres treated or 30 percent of the management area. The majority of the management area would remain at Condition Class 3 but the risk of catastrophic wildfire would be reduced.

4.10.10 Impacts on Fire Management from Minerals

Under all alternatives, the Minerals program will have no impact on the Fire Management program.

4.10.11 Impacts on Fire Management from Wind Energy

Under all alternatives, the Wind Energy program will have no impact on the Fire Management program.

4.10.12 Impacts on Fire Management from Travel Management and Route Designation

4.10.12.1 Common to All Management Areas

Travel Management and Route Designation direction causes negligible impacts to the Fire Management program as implemented under each alternative except as noted for Alternative B in the Cow Mountain and Knoxville management areas. Alternative A is the Preferred Alternative for travel management and access decisions in Cache Creek, Cedar Roughs, and Berryessa. Alternative B is the Preferred Alternative for the Indian Valley management area. Alternative C is the Preferred Alternative in Cow Mountain, Knoxville, Stornetta, the Geysers, and the Scattered Tracts.

4.10.12.2 Cow Mountain

Under Alternative B, the removal and rehabilitation of 10 miles of roads and trails could possibly impact Fire Management. However an assumption is made that such roads are small spur roads leading into adjacent private property and would create negligible impact upon fire suppression actions. The elimination of any road access to an area potentially requires greater use of air initial attack resources in those affected locations.

4.10.12.3 Knoxville

Under Alternative B, the removal and rehabilitation of 12 miles of roads and trails possibly could impact Fire Management. However an assumption is made that such roads are small spur roads leading into adjacent private property and would create negligible impacts upon fire suppression actions. The elimination of any road access to an area potentially requires greater use of air initial attack resources in those affected locations.

4.10.13 Impacts on Fire Management from Recreation Resources

4.10.13.1 Common to All Management Areas

Recreation resources cause negligible impacts to the Fire Management program as implemented under each alternative except under Alternative D. Under Alternative D, a moderate impact would occur because a greater projection of use occurs in this alternative. With increasing numbers of users there is a potential for a commensurate increase of wildfire occurrence and risk. Alternative C is the Preferred Alternative for recreation management decision in all management areas, except Knoxville and Berryessa. The Preferred Alternative for Knoxville and Berryessa is Alternative A.

4.10.14 Impacts on Fire Management from Interpretation and Education

4.10.14.1 Common to All Management Areas

Under all alternatives (Alternative C is the Preferred Alternative), the Interpretation and Education programs will have no impact on the Fire Management program.

4.10.15 Impacts on Fire Management from Soil Resources

4.10.15.1 Common to All Management Areas

Soil resources cause negligible impacts to the Fire Management program as implemented under each alternative. The constraints found in soil management policies are considered in the current suppression and fuels management programs, and would continue under implementation of any proposed alternative (Alternative C is the Preferred Alternative). There is negligible impact on the Fire Management program.

4.10.16 Impacts on Fire Management from Water Resources

4.10.16.1 Common to All Management Areas

Under all alternatives, Water Resources will have negligible impact on the Fire Management program. The constraints found in Water Resource management policies are considered in the current suppression and fuels management programs and would be continued under implementation of any proposed alternative (Alternative C is the Preferred Alternative).

4.10.17 Impacts on Fire Management from Air Quality

4.10.17.1 Common to All Management Areas

Air Quality management causes minor impacts to the Fire Management program as implemented under each alternative (Alternative A is the Preferred Alternative). These impacts are two-fold. The ability to implement approved prescribed burn plans with their associated smoke management plans are dependent upon the availability of actual burn days allowed by local Air Quality Districts. Secondly other agencies and the public complete daily for the ability to execute prescribe burn projects in similar timeframes. AQMDs only permit a certain level of burning to occur on any given day. The potential impact to Fire Management occurs where AQMD permission to conduct such burns is withheld. When this happens there are delays, postponement, and possible elimination of projects. The long-term effect in this situation results in the continuation of unacceptable wildland fuel levels and the inability to provide resource habitat improvement.

4.10.18 Potential Cumulative Impacts to Fire Management

A number of organizations and agencies within the 8 counties —including local Fire Safe councils, USFS, State Parks, etc.—have recently been developing or have developed fuels management reduction plans. Improved management of fuels in the Ukiah Field Office land will contribute to a moderate cumulative impact with these larger efforts.

4.11 IMPACTS ON MINERALS

According to the Solid Minerals, Oil and Gas, and Geothermal RFDs (see Appendices F, G, and H, respectively), areas of interest within the Ukiah Field Office are limited. Solid mineral interest exists throughout the management areas, while potential oil and gas mineral deposits are identified on the eastern border of the Ukiah Field Office, well outside of any of the management areas. Interest in both of these commodities is expected to be sporadic during the life of this plan. According to Figure F-1 in the Oil and Gas RFD (see Appendix F), most of the oil and gas interest is located along the eastern

border of the planning area. These areas lie well outside any of the Ukiah Field Office's surface lands. According to the Oil and Gas RFD, most of the above ground lands managed by the BLM are located in areas with little or no development potential. The eastern half of Cache Creek, southern portion of Cedar Roughs, all of Berryessa, and a few Scattered Tracts (Grapevine) are located in areas with moderate development potential.

Geothermal interest will be focused on the Geysers management area and the KGRA. Limited geothermal interest is anticipated in the rest of the Ukiah Field Office, but would not make up a significant part of future geothermal development (see Appendix H).

4.11.1 Impacts on Minerals from Visual Resources Management

Visual Resouces Management has the potential to affect energy (geothermal) and/or mineral potential by restricting or modifying the construction of geothermal, mining, oil, and/or gas operations or roads in Class I, II, and III areas, where the management objective is to preserve or retain the character of the landscape. Those areas identified in the Solid Minerals, Oil and Gas, and Geothermal RFDs are discussed below.

4.11.1.1 Cache Creek

Under Alternative A, there would be a potential minor to major negative impact to energy and/or mineral development. Currently, the Cache Creek WSA is managed as VRM Class I, and all other areas are managed as VRM Class II or III. These classifications would preclude any potential energy or mineral development from being considered within this management area.

Alternative B would result in potential negative impacts to energy and mineral development in the Primitive, Backcountry, Middlecountry, and Frontcountry Zones of the management area (VRM Classes I, I, II, and II, respectively). Potential energy and/or mineral development would not be allowed in all four of these ROS Zones under VRM Classes I and II.

Alternative C (Preferred Alternative) would result in potential negative impacts for the Backcountry, Middlecountry, and Frontcountry (south of Highway 20) Zones (VRM Classes II, III, and III, respectively). However, a potential positive impact would occur in the Frontcountry (north of Highway 20), Rural, and Urban Zones. Assigning these ROS Zones as VRM Class IV would allow for energy and/or mineral development to occur within the visual standards of the landscape.

Alternative D would yield the same impacts as Alternative C, except that the entire Frontcountry (north and south of Highway 20) would be managed as VRM Class IV. Thus, potential energy and/or mineral developments could occur in the Frontcountry, Rural, and Urban Zones under this alternative.

4.11.1.2 Berryessa

Under Alternative A, there would be a potential minor to major negative impact to energy and/or mineral development. Currently, Berryessa is managed as VRM Class III at Rocky Ridge. This would preclude any potential development from being considered along these ridgelines.

Alternative B would result in potential negative impacts to development in the Frontcountry Zone. This alternative prescribes VRM Class III for the Frontcountry. Alternative C (Preferred Alternative) would result in the same potential negative impacts for the Frontcountry Zone (VRM Class II), but would yield a potential positive impact for the Frontcountry Zone if energy and/or minerals are developed. Under this scenario, the Frontcountry in Berryessa would be managed as VRM Class IV. Alternative D would result in the same impacts as Alternative C.

4.11.1.3 Cedar Roughs

Under Alternative A, there would be a potential minor to major negative impact to energy and/or mineral development. Currently, the WSA in Cedar Roughs is managed as VRM Class I. This classification would preclude any potential energy and/or mineral development from being considered within this management area.

Alternative B (Preferred Alternative) would result in potential negative impacts to development in the Primitive and Frontcountry Zones. This alternative prescribes VRM Classes I and III for the Primitive and Frontcountry, respectively. Alternative C is the same as Alternative B, and would result in the same impacts. Alternative D is the same as Alternative B, except that the Frontcountry would be managed for VRM Class IV. This would result in a potential positive impact for energy and/or mineral development in Cedar Roughs.

4.11.1.4 Geysers

Under Alternative A, there would be a both potential minor to major negative and positive impacts to energy and/or mineral development. Currently, the Geysers is managed as VRM Classes II, III, and IV. This would preclude any potential development from being considered in all areas except those managed as VRM Class IV.

Alternative B would result in potential negative impacts to development in the Middlecountry Zone. This alternative prescribes VRM Class II for the Middlecountry. However, the Rural Zone would be managed as VRM Class IV. This would result in potential positive impacts to energy and/or minerals. Alternative C (Preferred Alternative) would result in the same impacts as Alternative B, except for the Middlecountry Zone (VRM Class III). This would still be a negative impact to energy and/or minerals in the Middlecountry, only not as severe as in Alternative B. Alternative D would result in potential positive impacts for development in both the Middlecountry and Rural Zones (VRM Class IV). These classifications would provide the most lands available for potential development.

4.11.1.5 Scattered Tracts

Since VRM has not been completed for the Scattered Tracts, there will be no impacts to potential energy and/or mineral development under Alternative A. Under Alternative B, there would be a potential minor to major negative impact to energy and/or mineral development since the Scattered Tracts would be managed as VRM Class II. This classification would preclude any future energy or mineral development on these lands.

Alternative C (Preferred Alternative) would also result in a potential negative impact in the Scattered Tracts, with most of the management area classified as VRM Class III. Designations at the Cedars lands

adjacent to Montgomery Woods State Park (VRM Class II) and the Black Forest (VRM Class II) would also result in a potential negative impact to energy and/or mineral development. Alternative D is the same as Alternative C, except that the Black Forest would be managed as VRM Class III.

4.11.2 Impacts on Minerals from Wildlife and Fish

Under all alternatives, policies and actions to minimize or eliminate the need for additional species listings under the ESA, as well as policies and actions to contribute to the recovery of already listed species would continue and would have a negligible impact on energy and/or minerals. Areas within the Ukiah Field Office that exhibit potential energy and/or mineral characteristics have been assessed for sensitive species. If any listed terrestrial T&E species are documented in the management areas, the BLM would begin regular monitoring to identify any nest sites or other important habitats.

Policies and actions regarding reintroductions and augmentation, predator and animal damage control, and monitoring of threatened and endangered species would continue and would have no impact on energy and/or minerals.

With the exception of Cache Creek (Alternative B is the Preferred Alternative), the Preferred Alternative for all management areas is Alternative C.

4.11.2.1 Cache Creek

A seasonal closure to protect bald eagles in Wilson Valley will be instituted in 2005, closing the surrounding ½ mile area to all public use. Depending on the number and extent of routes that are located within this season closure area, as well as their use level, the impacts to potential energy and/or mineral development could be moderate to major.

4.11.3 Impacts on Minerals from Vegetation Management

All of the vegetation management techniques employed in the various alternatives, including prescribed burning, mechanical methods (e.g., mowing, chaining, plowing, mastication), livestock grazing, and the use of pesticides, have the potential to disrupt (e.g., access points closed, energy/mining operation fields occupied) and thus impact potential energy and/or mineral operations. The impact of these disruptions, however, would be negligible in most cases and at worst should be minor, short-term, and localized. Those areas identified in the Solid Minerals, Oil and Gas, and Geothermal RFDs are discussed below.

4.11.3.1 Common to All Management Areas

Prescription burning is allowed or called for in all alternatives (Alternative C is the Preferred Alternative for all management areas). Some roads may have to be closed temporarily to potential energy and/or mineral operation use in order to accomplish the burn safely. Some roads that remain open may become difficult or unpleasant to use because of smoke. The impacts of prescription burning will therefore be minor to moderate, although short-term and localized, depending the size and location of the burns.

4.11.3.2 Cache Creek

Prescription burning is listed in all alternatives. Some roads may have to be closed temporarily to potential energy and/or mineral operation use in order to accomplish these burns safely. Some roads that remain open may become difficult or unpleasant to use because of smoke. The impacts of prescription burning will therefore be minor to moderate (although short-term and localized) depending the size, duration, and location of the burns. Alternative B calls for a range from the least amount of acreage to be burned to more than Alternative A; Alternatives C, and D recommend greater amounts. The impacts of the Alternatives would increase with the amount of acreage burned, although the relationship would not necessarily be direct.

4.11.3.3 Berryessa

Alternatives A and B allow prescription burning, but only Alternatives C and D actively recommend it. Pesticides and mechanical destruction of noxious weeds are not used in Alternatives A and B but are employed in Alternatives C and D. No impacts are anticipated from Alternatives A and B (i.e., if there is no prescribed burning); some minor, short-term, localized impacts to the use of roads may occur with Alternatives C or D (i.e., through the use of prescribed burning, pesticides or mechanical destructions).

4.11.3.4 Cedar Roughs

The same impacts have been identified for the Berryessa management area.

4.11.3.5 Geysers

The same impacts have been identified for the Berryessa and Cedar Roughs management areas.

4.11.3.6 Scattered Tracts

The same impacts have been identified for the Berryessa, Cedar Roughs, and Geysers management areas.

4.11.4 Impacts on Minerals from Riparian and Wetland Habitats

Management areas identified for potential energy and/or mineral development are would not be located within riparian corridors or wetland habitats; federal law regulates any impact to riparian and wetland resources. Therefore, riparian and wetland resources will have no impact on energy and/or mineral potential in the Ukiah Field Office.

4.11.5 Impacts on Minerals from Cultural and Socioeconomic Environment

Under all alternatives (Alternative C is the Preferred Alternative in all management areas), management actions regarding field evaluations, archaeological inventories, and maintaining relationships with tribes and educational institutions would have no impact on energy and/or mineral potential. Preventing damage and impacts to resources and the issuance of permits would continue as well under all alternatives, and would have minor impact on energy and/or mineral potential. The severity of any impact, if any, would depend on the location of any cultural and socioeconomic resources in relation to the areas designated for potential energy and/or mineral development. Educational and interpretive outreach programs to inform the public of cultural resource values could have a long-term minor

negative impact on energy and/or minerals if these programs were to be located within a potential energy and/or mineral area.

4.11.6 Impacts on Minerals from Lands and Realty

Impacts to potential energy and/or mineral development would occur when public lands were acquired, exchanged or otherwise disposed of, if the acreage involved featured roads or trails, or if newly acquired acreage offered opportunities for construction of new roads or trails. These impacts could range from positive to negative depending upon whether land acquisitions or disposals were involved. Also, depending on the size of the lands changing status and the size of their existing or potential energy and/or mineral availability, the impacts could range from negligible to major. Those areas identified in the Solid Minerals, Oil and Gas, and Geothermal RFDs are discussed below.

4.11.6.1 Cache Creek

Under Alternatives A, B, and C (Preferred Alternative), the BLM offers opportunities for the acquisition of new lands, with no disposal. Under Alternative D, the BLM would not pursue additional lands. Alternatives A, B, and C would have a positive impact on energy and/or mineral development if new acquisitions had the potential for development. If new acquisitions do not have energy or mineral development potential, there would be no impact. Alternative D would have no impact to energy and/or mineral resources.

Alternative A identifies a ROW avoidance area south of Highway 20 (outside of the WSA), with the area north of Highway 20 processed on a case-by-case basis. Under this alternative, no ROWs would be allowed within the WSA, except for allowed for under BLM Interim Management Policy. Alternative B allows the management area to be open to ROW applications, with no ROWs allowed within the WSA, except for allowed for under BLM Interim Management Policy. Alternative C would designate ROWs in the management area, and Alternative D would close the area to ROW applications. Since energy potential exists in area south of Highway 20 (see Appendix F), there would be potential negative impacts under Alternative A. Impacts under Alternatives B and C, resulting from a potential right-of-way, could be positive or negative (depending on approval), with the severity depending on the physical location of the approved right-of-way. Impacts under Alternative D would be major, as new ROWs would not be allowed in the management area.

4.11.6.2 Cedar Roughs

Under all Alternatives, the BLM has not identified any lands for acquisition. Under Alternative A, no right-of-way corridors would be designated, as well as any right-of-way avoidance or exclusion areas. Under Alternative B, the management area would be an exclusion area. Alternative C (Preferred Alternative) is the same as B, with the management area designated as an avoidance area. The management area would be closed to all new ROW applications under Alternative D. Since energy potential has been identified in Cedar Roughs (see Appendix F), there would be no impacts under Alternative A. Impacts under Alternative C, resulting from a potential right-of-way, could be positive or negative (depending on approval), with the severity depending on the physical location of the approved right-of-way. Impacts under Alternatives B and D would be major, as new ROWs would not be allowed in the management area.

4.11.6.3 Berryessa

Under all alternatives, the BLM has not identified any lands for acquisition. Under Alternative A, no right-of-way corridors would be designated, as well as any right-of-way avoidance or exclusion areas. Under Alternative B, the management area would be open to ROW applications, and would be processed and evaluated on a case by case need, with no ROW corridors designated. Alternative C (Preferred Alternative) is the same as B, with designated ROW corridors. The management area would be closed to all new ROW applications under Alternative D. Since energy potential has been identified in Berryessa (see Appendix F), there would be no impacts under Alternative A. Impacts under Alternatives B and C, resulting from a potential right-of-way, could be positive or negative (depending on approval), with the severity depending on the physical location of the approved right-of-way. Impacts under Alternative D would be major, as new ROWs would not be allowed in the management area.

4.11.6.4 Geysers

Under all alternatives, the BLM has not identified any lands for acquisition. Under Alternative A, no right-of-way corridors would be designated, as well as any right-of-way avoidance or exclusion areas. Under Alternative B, the management area would be open to ROW applications, and would be processed and evaluated on a case by case need, with no ROW corridors designated. Alternative C (Preferred Alternative) is the same as B, with designated ROW corridors. The management area would be closed to all new ROW applications under Alternative D. Since energy potential has been identified in the Geysers, there would be no impacts under Alternative A. Impacts under Alternatives B and C, resulting from a potential right-of-way, could be positive or negative (depending on approval), with the severity depending on the physical location of the approved right-of-way. Impacts under Alternative D would be major, as new ROWs would not be allowed in the management area.

4.11.6.5 Scattered Tracts

Under all alternatives, the BLM has not identified any lands for acquisition. Under Alternative A, no right-of-way corridors would be designated, as well as any right-of-way avoidance or exclusion areas. Under Alternative B, the management area would be open to ROW applications, and would be processed and evaluated on a case by case need, with no ROW corridors designated. Alternative C (Preferred Alternative) is the same as B, with designated ROW corridors. All Scattered Tracts would be identified for disposal under Alternative D. Since energy potential has been identified in some of the Scattered Tracts (see Appendix F), there would be no impacts under Alternative A. Impacts under Alternatives B and C, resulting from a potential right-of-way, could be positive or negative (depending on approval), with the severity depending on the physical location of the approved right-of-way. Impacts under Alternative D would be major, as there would be no Scattered Tracts lands available.

4.11.7 Impacts on Minerals from Special Designations

Designation of lands as WSAs, ACECs, or SRMAs has the potential to impact potential energy and/or mineral development. As they are generally established to protect sensitive resources, energy and/or mineral operations (including motorized travel) may be restricted and some roads may be closed. ACEC designation indicates that the BLM recognized the significant values of the area and intends to implement management to protect and enhance the resource values. Because of these values, all ACECs are considered land use authorization avoidance areas since they are known to contain resource values that

will pose special constraints for and possible denial of application for land uses that cannot be designed to be compatible with the management objectives and prescriptions for the ACEC (BLM 2005c).

Under all alternatives, there would be no change to the Berryessa, Geysers, or Scattered Tracts management areas.

4.11.7.1 Cache Creek

Alternative A would maintain the currently designated WSA. Alternatives B, C (Preferred Alternative) and D would manage increasing acreages of land adjacent to the WSA for wilderness characteristics. No new ROWs or roads will be built on these lands. Managing for wilderness characteristics would have a long-term negative impact on potential energy and/or mineral development if the proposed WSA additions are located south of Highway 20. According to the Oil and Gas RFD (Appendix F) the southern half of the Cache Creek management areas is located in an area with moderate development potential.

4.11.7.2 Cedar Roughs

Alternative A would maintain the currently designated ACEC/RNA and WSA. Alternatives B (Preferred Alternative), C, and D would manage increasing acreages of land adjacent in the ACEC, but would maintain the current level for the Cedar Roughs WSA. These alternatives would have a potentially negative impact on energy and/or mineral development in the area, depending on the guidelines set forth in the designated ACEC.

4.11.8 Impacts on Minerals from Forest Management

Commercial forest lands exist on public lands only in the Cow Mountain area, in the Scattered Tracts Area west of Highway 101, and in the Black Forest. It is not yet known if areas of potential energy and/or mineral development are located within any commercial forest lands. However, there will be no commercial harvest of forest lands in the Ukiah Field Office, resulting in no impact on energy and/or mineral potential in the Ukiah Field Office.

4.11.9 Impacts on Minerals from Livestock Grazing Management

Grazing allotments exist on public lands in the Berryessa, Knoxville, and Indian Valley management areas (there are no current grazing allotments in Cache Creek and the Geysers). Although the locations of these allotments are known, the precise locations of potential energy and/or mineral developments are not known. The presence of livestock on public lands, through weed control or fire management, within the Ukiah Field Office would not impact the potential for energy and/or mineral development. Additionally, closing out a grazing permit or allotment, or adding an allotment or expanding a permit would not impact energy and/or mineral resources.

4.11.10 Impacts on Minerals from Fire Management

Under all of the alternatives, a Fire Management Plan will be prepared which would incorporate policies and management actions regarding wildfire suppression, fuels management, prescribed burning, rehabilitation, stabilization and restoration as well as efforts for fire prevention, risk mitigation, and

education. Wildfire suppression policies acknowledge that WSAs and SRMAs need special suppression tactics to help maintain the recreational setting and experiences of these areas and would help to minimize impacts on recreation in these areas from wildfires. General fuels management actions would not impact potential energy and/or mineral development.

Under all alternatives (Alternative C is the Preferred Alternative for all management areas), the management areas would generally have differing goals. Prescribed burning at a management area could have localized short-term impacts on potential energy and/or mineral development if energy and/or mineral operations or access was temporarily suspended due to prescribed burning, especially during high use periods or special events. Impacts on recreation from wildfires and prescribed burns would be the same.

4.11.11 Impacts on Minerals from Minerals

Under all alternatives, existing policies regarding mineral development in WSAs would remain the same and would not impact potential energy and/or mineral development. The alternatives for energy and/or mineral relate to where locatable mineral exploration and development or fluid mineral leasing would not be allowed (withdrawal areas). Alternative A (Preferred Alternative for Berryessa, the Geysers, and Scattered Tracts) maintains existing withdrawals for both locatable minerals and fluid mineral leasing. Alternative B proposes additional mineral withdrawal areas in the Cedars ACEC and the Stornetta management area, as well as additional fluid mineral withdrawal areas in the Cache Creek and Cedar Roughs WSAs and the Stornetta management area. Alternatives C (Preferred Alternative for Cache Creek and Cedar Roughs) and D (same as Alternative C) propose even more withdrawal areas/acreage. For management areas under any alternative that are not withdrawn, impacts from new mineral developments or leasing could include but are not limited to short-term or long-term impacts to potential energy and/or mineral development (both physical/landscape changes and from increased numbers of authorized vehicles) and long-term loss of potential energy and/or mineral lands and opportunities. Impacts could range from negligible to major and would depend on level of use and duration. Compliance with NEPA may reveal additional impacts.

4.11.12 Impacts on Minerals from Wind Energy

Under all four alternatives, all potential energy and/or mineral developments would be subject to Wind Energy BMPs (see Appendix I) that would require projects to avoid, minimize or mitigate impacts to resources and land uses, integrate site design elements with the landscape, create access road siting and management plans, develop "good housekeeping procedures" to keep the site clean, develop measures to ensure safety for visitors, and keep noise to a minimum. Future wind energy developments would not impact energy and/or mineral potential.

4.11.13 Impacts on Minerals from Travel Management and Route Designation

Travel management policies would benefit potential energy and/or mineral development by providing access to energy and/or mineral operations and facilities, while potentially negatively impacting energy and/or mineral operations if routes were to be closed. Travel management would not change under all four alternatives for the Indian Valley management area.

4.11.13.1 Cache Creek

All alternatives would continue current travel management actions and policies. Currently, 11.24 miles of roads are open to street legal vehicle with seasonal restrictions, but are open year round to mechanized recreation. Since there would be no road closures under all alternatives, there will be no impact to potential energy and/or mineral development in Cache Creek.

4.11.13.2 Cedar Roughs

All alternatives would continue current travel management actions and policies. Routes are currently closed to motorized use in Cedar Roughs. Since there would be no roads available under all alternatives, there will be a potentially moderate to major impact to energy and/or mineral development in Cedar Roughs.

4.11.13.3 Berryessa

Alternative A would continue current travel management actions and policies. Currently, 12.75 miles of roads are open to street legal vehicle use. Alternative B would close all but 1.25 miles of these roads to all uses except administrative/official use, while Alternatives C (Preferred Alternative) and D would allow year-round mechanized, non-motorized and motorized use of the roads. The level of impact would depend on the future location of potential energy and/or mineral development within the Berryessa management area, and could be negligible to minor depending on the quantity and location of routes closed.

4.11.13.4 Geysers

Alternative A would continue current travel management actions and policies. Currently 6.31 miles of roads are open to street legal vehicle use only during the general deer hunting season, but are open year round to mechanized recreation. Alternative B would close all but 1.56 miles of these roads to all uses except administrative/official use, while Alternatives C (Preferred Alternative) and D would allow year-round mechanized, non-motorized and motorized use of the roads. The level of impact would depend on the future location of potential energy and/or mineral development within the Geysers management area, and could be negligible to minor depending on the quantity and location of routes closed.

4.11.13.5 Scattered Tracts

Most areas in the Scattered Tracts do not have legal public access and no route inventory. Alternative A would continue current travel management actions and policies. Alternative B would remove and rehabilitate any existing routes. Alternatives C (Preferred Alternative) and D would develop new trails. Alternatives B, C, and D would result in a potential negative impact to energy and/or mineral development, as there would be no roads available for energy and/or mineral development.

4.11.14 Impacts on Minerals from Recreation Resources

Management goals and decisions regarding recreation have the potential to impact potential energy and/or mineral development in the proposed management areas. Programs potentially impacting energy and/or mineral development include allowable uses and facility development (route closure impacts are discussed in Section 4.11.13). Under all alternatives, the impact of these types of changes will be short-

term, localized, and negligible to minor, depending on the extent of surface disturbance and the nature of the allowed use.

4.11.15 Impacts on Minerals from Soil Resources

Modern construction techniques designed to minimize disruption of natural drainage patterns, erosion and sedimentation will be applied to all new road and trail construction, and reroutes and maintenance of existing trails. This, in combination with the Wind Energy BMPs (see Appendix I), will minimize any potential impacts to energy and/or mineral developments. Any proposed route closure or re-routing could cause temporary impacts, but they would be negligible to minor. Impacts to potential energy and/or mineral developments could be more severe depending on the location of the route closure and their relationship to the energy and/or mineral developments.

The presence of naturally occurring asbestos (NOA) may have minor to moderate impacts on potential energy and/or mineral developments, as regulations are set forth to minimize exposure.

Under all alternatives (Alternative C is the Preferred Alternative for all management areas), soil resources management decisions will have negligible impacts on potential energy and/or mineral development in the planning area.

4.11.16 Impacts on Minerals from Water Resources

Management goals for both Water and Soil Resources include minimizing the amount of sediment entering the waterways of the planning area. Therefore, many of the policies, actions, and projects that would address this goal have been covered under Section 4.11.15.

Under all alternatives (Alternative C is the Preferred Alternative for all management areas), management actions regarding water resources will have negligible impacts on potential energy and/or mineral development in the Ukiah Field Office.

4.11.17 Potential Cumulative Impacts to Minerals

There are currently no active oil and gas operations within the Ukiah Field Office, and there are geothermal activities present in the Geysers management area. With increasing populations in the surrounding areas, alternative energy sources will be a priority during the life of this plan. Because of the varying levels of impacts energy development has on its environment (see Appendices F and H), these potential energy sources (especially geothermal) may experience higher demand during the life of this RMP. Overall impacts to this potential energy resource and those areas will be negligible.

There are currently no active mines within the Ukiah Field Office, and demand for these commodities is expected to be minimal during the life of this RMP (see Appendix G). Due to the nature of the resource and regulations governing its exploration and extraction, overall impacts to solid mineral resources in the Ukiah Field Office will be negligible.

4.12 IMPACTS ON WIND ENERGY

As per the Wind Energy RFD Scenario (see Appendix J), there are only four areas of interest within the Ukiah Field Office. Knoxville, Indian Valley, Berryessa, and Geysers are currently areas anticipated to receive wind energy interest during the life of this RMP. The Cache Creek management area (north of Highway 20) has also been identified by BLM staff as a location for potential wind energy development. The remaining management areas (Cow Mountain, Cedar Roughs, Stornetta, and Scattered Tracts) are not anticipated to receive wind energy pressure during the life of this RMP, resulting in no impacts on wind energy in these management areas. Only those areas identified in the Wind Energy RFD will be discussed.

4.12.1 Impacts on Wind Energy from Visual Resources Management

Visual Resources Management has the potential to affect wind energy potential by restricting or modifying the construction of new wind energy operations or roads in Class I and Class II areas, where the management objective is to preserve or retain the character of the landscape.

4.12.1.1 Knoxville

Since VRM has not been completed for the Knoxville management area, there will be no impacts to potential wind energy development under Alternative A. Wind energy applications would be considered on a case-by-case basis. Under Alternatives B and C (Preferred Alternative), however, there would be potential negative impacts to wind energy development in both the Middlecountry and Frontcountry Zones of the management area. Alternatives B and C prescribe VRM Classes II and III for the Middlecountry and Frontcountry Zones, respectively. Although the potential negative impact would be more severe in the Middlecountry Zone (VRM Class II) than in the Frontcountry Zone, the impacts would be minor. The potential negative impacts to wind energy development would be negligible to minor in the Frontcountry Zone, as these VRM and ROS classifications offer more flexibility in altering the visual resources. Alternative D would result in both negative and positive impacts to wind energy development in the management area. The Middlecountry Zone would not be available to wind turbines under the VRM (III) and ROS classification, while the Frontcountry Zone would not be managed for VRM. Wind energy development would be available in the Frontcountry under Alternative D.

4.12.1.2 Indian Valley

Under Alternative A, there would be a potential minor to major negative impact to wind energy development. Currently, Indian Valley is managed as VRM Class II from ridge to ridge around the reservoir. This would preclude any potential wind energy development from being considered along these ridgelines.

Alternative B would result in potential negative impacts to wind energy development in both the Middlecountry and Frontcountry Zones of the management area. This alternative prescribes VRM Classes II and III for the Middlecountry and Frontcountry Zones, respectively. Although the potential negative impact would be more severe in the Middlecountry Zone (VRM Class II) than in the Frontcountry Zone, the impacts would be minor. The potential negative impacts to wind energy development would be negligible to minor in the Frontcountry Zone, as these VRM and ROS classifications offer more flexibility in altering the visual resources.

Alternative C (Preferred Alternative) would result in the same potential negative impacts for the Middlecountry Zone (VRM Class II), and would yield a potential positive impact for the Frontcountry Zone. Assigning the Frontcountry Zone as VRM Class IV would allow for wind energy development to occur within the visual standards of the landscape.

Alternative D would prescribe VRM Classes III, IV, and IV in the Middlecountry, Frontcountry, and Rural Zones, respectively. This would result in a potential minor negative impact to wind energy development in the Middlecountry. For the Frontcountry and Rural Zones, these classifications would provide the most lands available for potential wind energy development.

4.12.1.3 Cache Creek

Under Alternative A, there would be a potential minor to major negative impact to wind energy development. Currently, the Cache Creek WSA is managed as VRM Class I, and all other areas are managed as VRM Class II or III. These classifications would preclude any potential wind energy development from being considered within this management area.

Alternative B would result in potential negative impacts to wind energy development in the Primitive, Backcountry, Middlecountry, and Frontcountry Zones of the management area (VRM Classes I, I, II, and II, respectively). Potential wind energy development would not be allowed in all four of these ROS Zones under VRM Classes I and II.

Alternative C (Preferred Alternative) would result in potential negative impacts for the Backcountry, Middlecountry, and Frontcountry (south of Highway 20) Zones (VRM Classes II, III, and III, respectively). However, a potential positive impact would occur in the Frontcountry (north of Highway 20), Rural, and Urban Zones. Assigning these ROS Zones as VRM Class IV would allow for wind energy development to occur within the visual standards of the landscape.

Alternative D would yield the same impacts as Alternative C, except that the entire Frontcountry (north and south of Highway 20) would be managed as VRM Class IV. Thus, potential wind energy developments could occur in the Frontcountry, Rural, and Urban Zones under this alternative.

4.12.1.4 Berryessa

Under Alternative A, there would be a potential minor to major negative impact to wind energy development. Currently, Berryessa is managed as VRM Class III at Rocky Ridge. This would preclude any potential wind energy development from being considered along these ridgelines. .

Alternative B would result in potential negative impacts to wind energy development in the Frontcountry Zone. This alternative prescribes VRM Class III for the Frontcountry. Alternative C (Preferred Alternative) would result in the same potential negative impacts for the Frontcountry Zone (VRM Class II), but would yield a potential positive impact for the Frontcountry Zone if wind energy is developed. Under this scenario, the Frontcountry in Berryessa would be managed as VRM Class IV. Alternative D would result in the same impacts as Alternative C.

4.12.1.5 Geysers

Under Alternative A, there would be a both potential minor to major negative and positive impacts to wind energy development. Currently, the Geysers is managed as VRM Classes II, III, and IV. This would preclude any potential wind energy development from being considered in all areas except those managed as VRM Class IV.

Alternative B would result in potential negative impacts to wind energy development in the Middlecountry Zone. This alternative prescribes VRM Class II for the Middlecountry. However, the Rural Zone would be managed as VRM Class IV. This would result in potential positive impacts to wind energy. Alternative C (Preferred Alternative) would result in the same impacts as Alternative B, except for the Middlecountry Zone (VRM Class III). This would still be a negative impact to potential wind energy in the Middlecountry, only not as severe as in Alternative B. Alternative D would result in potential positive impacts for wind energy development in both the Middlecountry and Rural Zones (VRM Class IV). These classifications would provide the most lands available for potential wind energy development.

4.12.2 Impacts on Wind Energy from Wildlife and Fish

Under all alternatives, policies and actions to minimize or eliminate the need for additional species listings under the ESA, as well as policies and actions to contribute to the recovery of already listed species, would continue and would have a negligible impact on wind energy. Areas within the Ukiah Field Office that exhibit potential wind energy characteristics have been assessed for sensitive species. If any listed terrestrial T&E species are documented in the following management areas, the BLM would begin regular monitoring to identify any nest sites or other important habitats.

Policies and actions regarding reintroductions and augmentation, predator and animal damage control, and monitoring of threatened and endangered species would continue and would have no impact on wind energy.

With the exception of Cache Creek (Alternative B is the Preferred Alternative), the Preferred Alternative for all management areas is Alternative C.

No significant impacts are anticipated in Berryessa and the Geysers under all of the alternatives.

4.12.2.1 Knoxville

All Alternatives (Alternative C is the Preferred Alternative) ensure that plans for energy development projects contain adequate measures to protect migratory bird habitat and flight routes, including monitoring and adaptive management techniques to ensure success. Furthermore, Alternatives B, C, and D require all BMPs to protect migratory birds from adverse impacts of energy development. Under these protective measures (all alternatives), the impacts to wind energy in Knoxville would be negligible to minor.

4.12.2.2 Indian Valley

Alternatives C (Preferred Alternative) and D have provisions for the protection of bald eagles which may be found around the reservoir, closing the surrounding lands to all public use within ½ mile and ¼ mile respectively during the nesting season. Depending on where eagle nests are located relative to points of access to potential wind energy developments, and how heavily those routes are utilized, there could be moderate to major impact on wind energy in the area.

4.12.2.3 Cache Creek

A seasonal closure to protect bald eagles in Wilson Valley will be instituted in 2005, closing the surrounding ½ mile area to all public use. Depending on the number and extent of routes that are located within this season closure area, as well as their use level, the impacts to potential wind energy development could be moderate to major.

4.12.3 Impacts on Wind Energy from Vegetation Management

All of the vegetation management techniques employed in the various alternatives, including prescribed burning, mechanical methods (e.g., mowing, plowing, mastication), livestock grazing, and the use of pesticides, have the potential to disrupt (e.g., access points closed, wind energy fields occupied) and thus impact potential wind energy operations. The impact of these disruptions, however, would be negligible in most cases and at worst should be minor, short-term, and localized.

4.12.3.1 Common to All Management Areas

Prescription burning is allowed or called for in all alternatives (Alternative C is the Preferred Alternative for all management areas). Some roads may have to be closed temporarily to potential wind energy operation use in order to accomplish the burn safely. Some roads that remain open may become difficult or unpleasant to use because of smoke. The impacts of prescription burning will therefore be minor to moderate, although short-term and localized, depending the size and location of the burns.

4.12.3.2 Knoxville

Alternatives A and B allow prescription burning, but only Alternatives C and D actively recommend it. Pesticides and mechanical destruction of noxious weeds are not used in Alternatives A and B but are employed in Alternatives C and D. No impacts are anticipated from Alternatives A and B (i.e., if there is no prescribed burning); some minor, short-term, localized impacts to the use of roads may occur with Alternatives C or D (i.e., through the use of prescribed burning, pesticides or mechanical destructions).

4.12.3.3 Indian Valley

The same impacts have been identified for the Knoxville management area.

4.12.3.4 Cache Creek

Prescription burning is listed in all alternatives. Some roads may have to be closed temporarily to potential wind energy operation use in order to accomplish these burns safely. Some roads that remain open may become difficult or unpleasant to use because of smoke. The impacts of prescription burning

will therefore be minor to moderate (although short-term and localized) depending the size, duration, and location of the burns. Alternative B calls for a range from the least amount of acreage to be burned to more than Alternative A; Alternatives C, and D recommend greater amounts. The impacts of the Alternatives would increase with the amount of acreage burned, although the relationship would not necessarily be direct.

4.12.3.5 Berryessa

The same impacts have been identified for the Knoxville and Indian Valley management areas.

4.12.3.6 Geysers

The same impacts have been identified for the Knoxville, Indian Valley, and Berryessa management areas.

4.12.4 Impacts on Wind Energy from Riparian and Wetland Resources

The four management areas designated for potential wind energy development are located along ridgelines. Since this type of energy production demands a steady source of wind, wind energy production precludes development within any riparian and wetland areas. Therefore, riparian and wetland resources will have no impact on wind energy potential in the Ukiah Field Office.

4.12.5 Impacts on Wind Energy from Lands and Realty

Impacts to potential wind energy development would occur when public lands were acquired, exchanged or otherwise disposed of, if the acreage involved featured roads or trails, or if newly acquired acreage offered opportunities for construction of new roads or trails. These impacts could range from positive to negative depending upon whether land acquisitions or disposals were involved. Also, depending on the size of the lands changing status and the size of their existing or potential wind energy availability, the impacts could range from negligible to major.

4.12.5.1 Knoxville

Under all Alternatives, the BLM would retain all lands and acquire no new lands within the Knoxville management area. Under Alternative A, no right-of-way corridors would be designated, as well as any right-of-way avoidance or exclusion areas. Under Alternative B, the management area would be open to ROW applications, and would be processed and evaluated on a case by case need, with no ROW corridors designated. Alternative C (Preferred Alternative) is the same as B, with designated ROW corridors. The management area would be closed to all new ROW applications under Alternative D. Since wind energy potential has been identified in Berryessa, there would be no impacts under Alternative A. Impacts under Alternatives B and C, resulting from a potential right-of-way, could be positive or negative (depending on approval), with the severity depending on the physical location of the approved right-of-way. Impacts under Alternative D would be major, as new ROWs would not be allowed in the management area.

4.12.5.2 Indian Valley

Under Alternatives A and B, the BLM would retain all lands and acquire no new lands within the Indian Valley management area. There would be not impact to wind energy potential under these alternatives. Alternatives C (Preferred Alternative) and D would designate the corridor delineated in the 1992 "Western Regional Corridor Study", which is currently occupied by an electrical transmission line, as a right-of-way corridor where it crosses public lands. The level of positive impact under these alternatives would depend on the location of the potential wind energy development to the right-of-way corridor.

4.12.5.3 Cache Creek

Under Alternatives A, B, and C (Preferred Alternative), the BLM offers opportunities for the acquisition of new lands, with no disposal. Under Alternative D, the BLM would not pursue additional lands. Alternatives A, B, and C would have a positive impact on wind energy if new acquisitions were within the area north of Highway 20. Alternative D would have no impact to wind energy.

Alternative A identifies a ROW avoidance area south of Highway 20 (outside of the WSA), with the area north of Highway 20 processed on a case-by-case basis. Under this alternative, no ROWs would be allowed within the WSA, except for allowed for under BLM Interim Management Policy. Alternative B allows the management area to be open to ROW applications, with no ROWs allowed within the WSA, except for allowed for under BLM Interim Management Policy. Alternative C would designate ROWs in the management area, and Alternative D would close the area to ROW applications. Since wind energy potential exists in area north of Highway 20, there would be no impacts under Alternative A. Impacts under Alternatives B and C, resulting from a potential right-of-way, could be positive or negative (depending on approval), with the severity depending on the physical location of the approved right-of-way. Impacts under Alternative D would be major, as new ROWs would not be allowed in the management area.

4.12.5.4 Berryessa

Under all Alternatives, the BLM has not identified any lands for acquisition. Under Alternative A, no right-of-way corridors would be designated, as well as any right-of-way avoidance or exclusion areas. Under Alternative B, the management area would be open to ROW applications, and would be processed and evaluated on a case by case need, with no ROW corridors designated. Alternative C (Preferred Alternative) is the same as B, with designated ROW corridors. The management area would be closed to all new ROW applications under Alternative D. Since wind energy potential has been identified in Berryessa, there would be no impacts under Alternative A. Impacts under Alternatives B and C, resulting from a potential right-of-way, could be positive or negative (depending on approval), with the severity depending on the physical location of the approved right-of-way. Impacts under Alternative D would be major, as new ROWs would not be allowed in the management area.

4.12.5.5 Geysers

Under all Alternatives, the BLM has not identified any lands for acquisition. Under Alternative A, no right-of-way corridors would be designated, as well as any right-of-way avoidance or exclusion areas. Under Alternative B, the management area would be open to ROW applications, and would be processed and evaluated on a case by case need, with no ROW corridors designated. Alternative C (Preferred

Alternative) is the same as B, with designated ROW corridors. The management area would be closed to all new ROW applications under Alternative D. Since wind energy potential has been identified in Berryessa, there would be no impacts under Alternative A. Impacts under Alternatives B and C, resulting from a potential right-of-way, could be positive or negative (depending on approval), with the severity depending on the physical location of the approved right-of-way. Impacts under Alternative D would be major, as new ROWs would not be allowed in the management area.

4.12.6 Impacts on Wind Energy from Special Designations

Designation of lands as WSAs or ACECs has the potential to impact potential wind energy development. As they are generally established to protect sensitive resources, wind energy operations (including motorized travel) may be restricted and some roads may be closed. ACEC designation indicates that the BLM recognized the significant values of the area and intends to implement management to protect and enhance the resource values. Because of these values, all ACECs are considered land use authorization avoidance areas since they are known to contain resource values that will pose special constraints for and possible denial of application for land uses that cannot be designed to be compatible with the management objectives and prescriptions for the ACEC (BLM 2005c).

Under all alternatives, there would be no change to the Berryessa or Geysers management areas.

For impact analysis, the corresponding maps Knoxville, Indian Valley, and Cache Creek (Figures 2-2, 2-3, and 2-4, respectively) were compared to wind energy potential maps presented by the BLM (see Appendix K) and the RFD for wind energy (see Appendix J).

4.12.6.1 Knoxville

Under Alternative A there would continue to be no ACEC in this management area. Alternatives B, C (Preferred Alternative), and D would add an ACEC with successive alternatives adding additional acreage to the designated area. Under Alternatives B and C, the proposed ACEC acreages would not occur within any areas identified as having wind energy potential. Alternative D, however, would recommend the most ACEC designation. Under this alternative, lands with wind energy potential can be found in the proposed ACEC, as it would encompass the entire Knoxville management area. This would result in a potentially negative impact to wind energy development in the area. According to the RFD for wind energy, the potential development areas within Knoxville do not currently contain the infrastructure to support energy development. The construction and maintenance of new roads and transmission line corridors may not be allowed, depending on the ACEC designation.

4.12.6.2 Indian Valley

Alternative A would maintain the existing 40-acre Indian Valley Brodiaea ACEC and would not impact potential wind energy development. Alternative B would add 60 acres to this ACEC. If changes to allowable uses become necessary to protect resources, impacts to potential wind energy development could result, depending on the change. As stated in Chapter 2, Alternatives, changes in ACEC designation under Alternative B would be located west of the proposed Walker Ridge Energy Project. However, since Walker Ridge is designated as location for potential wind energy development, this could have an impact on wind energy resources if allowable uses were to change.

Alternative C (Preferred Alternative) is the same as Alternative B, but in addition, would designate a 3,990-acre Walker Ridge ACEC. This designation would place all lands with wind energy potential within the boundaries of an ACEC. According to the wind energy potential and ACEC maps (see Appendix K and Figure 2-3), Alternative C would not expand the Indian Valley Brodiaea ACEC into lands with wind energy potential. This would result in a potentially negative impact to wind energy development in the area. According to the RFD for wind energy, Indian Valley does have good road access. However, many roads would need to be improved. The construction and improvement of roads needed for turbine installation may not be allowed, depending on the ACEC designation.

Alternative D is the same as Alternative C but would designate more acreage to the Walker Ridge ACEC with 8,784 acres, including the Walker Ridge Energy Project. With this designation, there would be the same potentially negative impacts found in Alternative C, depending on whether or not the allowable uses within the ACEC would change.

4.12.6.3 Cache Creek

Alternative A would maintain the currently designated WSA. Alternatives B, C (Preferred Alternative) and D would manage increasing acreages of land adjacent to the WSA for wilderness characteristics. No new ROWs or roads will be built on these lands. Managing for wilderness characteristics would have a long-term negative impact on potential wind energy development, as some of the the proposed WSA additions are located north of Highway 20. The lands north of Highway 20 are the only locations within the Cache Creek management area that would be available for wind energy development.

4.12.7 Impacts on Wind Energy from Forest Management

Commercial forest lands exist on public lands only in the Cow Mountain area, in the Scattered Tracts Area west of Highway 101, and in the Black Forest. The four management areas designated as locations for potential wind energy development are not located within any commercial forest lands. Therefore, under all alternatives (Alternative A is the Preferred Alternative for all management areas), forest management activities will have no impact on wind energy potential in the Ukiah Field Office.

4.12.8 Impacts on Wind Energy from Livestock Grazing Management

Grazing allotments exist on public lands in the Berryessa, Knoxville, and Indian Valley management areas (there are no current grazing allotments in Cache Creek and the Geysers). Although the locations of these allotments are known, the precise locations of potential wind energy developments are not known. The presence of livestock on public lands, through weed control or fire management, within the Ukiah Field Office would not impact the potential for wind energy development. Additionally, closing out a grazing permit or allotment, or adding an allotment or expanding a permit would not impact wind energy resources.

4.12.9 Impacts on Wind Energy from Fire Management

Under all of the alternatives (Alternative C is the Preferred Alternative for all management areas), a Fire Management Plan will be prepared which would incorporate policies and management actions regarding wildfire suppression, fuels management, prescribed burning, rehabilitation, stabilization and restoration as well as efforts for fire prevention, risk mitigation, and education. Wildfire suppression policies

acknowledge that WSAs and SRMAs need special suppression tactics to help maintain the recreational setting and experiences of these areas and would help to minimize impacts on recreation in these areas from wildfires. General fuels management actions would not impact potential wind energy development.

Under all alternatives, the management areas would generally have differing goals. Prescribed burning at a management area could have localized short-term impacts on potential wind energy development if wind energy operations or access was temporarily suspended due to prescribed burning, especially during high use periods or special events. Impacts on recreation from wildfires and prescribed burns would be the same.

4.12.10 Impacts on Wind Energy from Minerals

Under all alternatives, existing policies regarding mineral development in WSAs would remain the same and would not impact potential wind energy development. The alternatives for energy and minerals relate to where locatable mineral exploration and development or fluid mineral leasing would not be allowed (withdrawal areas). Alternative A (Preferred Alternative for Knoxville, Indian Valley, Berryessa, and the Geysers) maintains existing withdrawals for both locatable minerals and fluid mineral leasing. Alternative B proposes additional withdrawal areas and Alternatives C (Preferred Alternative for Cache Creek) and D (same as Alternative C) propose even more withdrawal areas/acreage. For management areas under any alternative that are not withdrawn, impacts from new mineral developments or leasing could include but are not limited to short-term or long-term impacts to potential wind energy development (both physical/landscape changes and from increased numbers of authorized vehicles) and long-term loss of potential wind energy lands and opportunities. Impacts could range from negligible to major and would depend on level of use and duration. Compliance with NEPA may reveal additional impacts.

4.12.11 Impacts on Wind Energy from Wind Energy

Under all four alternatives, all potential wind energy developments would be subject to Wind Energy BMPs (see Appendix I) that would require projects to avoid, minimize or mitigate impacts to resources and land uses, integrate site design elements with the landscape, create access road siting and management plans, develop "good housekeeping procedures" to keep the site clean, develop measures to ensure safety for visitors, and keep noise to a minimum. These measures would result in no direct impacts to wind energy, as the Wind Energy BMPs are required by the BLM.

4.12.11.1 Knoxville

Under Alternatives A, there are no current decisions regarding wind energy development in Knoxville, and applications are analyzed on a case-by-case basis. There would be no impact to potential wind energy under this alternative. Alternative B makes Knoxville available for potential wind energy development. Alternatives C and D (Preferred Alternative) are the same as Alternative A, with Knoxville identified as being available for wind energy ROW applications. Under Alternatives B, C, and D, there would be potential positive impacts to wind energy development in the Knoxville management area.

4.12.11.2 Indian Valley

Under Alternative A, there are no current decisions regarding wind energy development in Indian Valley, and applications are analyzed on a case-by-case basis. There would be no impact to potential wind energy under this alternative. Alternative B includes Walker Ridge (Indian Valley) as an exclusion area. Alternative C is the same as Alternative A, with Walker Ridge identified as an avoidance area for wind energy ROW applications. The impacts associated with Alternative B are long-term, major, and negative to potential wind energy development in Indian Valley, while impacts from Alternative C would be negligible to minor. Alternative D (Preferred Alternative) makes Indian Valley available for potential wind energy development. Under this alternative, there would be potential positive impacts to wind energy development in the Indian Valley management area.

4.12.11.3 Cache Creek

Under Alternative A, there are no current decisions regarding wind energy development in Indian Valley, and applications are analyzed on a case-by-case basis. There would be no impact to potential wind energy under this alternative. However, under Alternatives B (Preferred Alternative), C, and D, Cache Creek (south of Highway 20) would be designated as an exclusion area. The impacts associated with these alternatives are long-term, major, and negative to potential wind energy development in Cache Creek (south of Highway 20). Potential positive impacts to wind energy development in Cache Creek (north of Highway 20) would occur, as this area would still be available to ROW applications under Alternatives B, C, and D.

4.12.11.4 Berryessa

Under Alternative A, there are no current decisions regarding wind energy development in Berryessa, and applications are analyzed on a case-by-case basis. There would be no impact to potential wind energy under this alternative. However, under Alternatives B and C, Berryessa would be designated as an exclusion area, and as an avoidance areas under Alternative D (Preferred Alternative). The impacts associated with Alternatives B and C are long-term, major, and negative to potential wind energy development in the management area. The impacts associated with Alternative D are less severe then those with Alternatives B and C, but would still be negative.

4.12.11.5 Geysers

Under Alternative A, there are no current decisions regarding wind energy development in the Geysers, and applications are analyzed on a case-by-case basis. There would be no impact to potential wind energy under this alternative. Under Alternatives B (Preferred Alternative), C, and D, the Geysers would be available for potential wind energy development. Under these alternatives, there would be potential positive impacts to wind energy development in the Indian Valley management area.

4.12.12 Impacts on Wind Energy from Travel Management and Route Designation

Travel management policies would benefit potential wind energy development by providing access to wind energy operations and facilities, while potentially negatively impacting wind energy operations if routes were to be closed. Travel management would not change under all four alternatives for the Indian Valley management area.

4.12.12.1 Knoxville

Alternative A would continue current travel management actions and policies. Under Alternative B, about 42 miles of roads would be closed to all motorized use. Alternatives C (Preferred Alternative) and D would close fewer roads, consisting of all but two of the same roads closed under Alternative B. Depending on the location of potential wind energy development in the Knoxville management area, impacts from Alternative B would be negative long-term minor because a large portion of roads would still be available for use, while impacts from Alternatives C and D would be negative long-term negligible because the vast majority of roads would continue to be open.

4.12.12.2 Berryessa

Alternative A (Preferred Alternative) would continue current travel management actions and policies at this area. Alternative B would remove and rehabilitate all existing roads and fire breaks (with the exception of the radio tower road), while Alternatives C and D would acquire legal public access and allow non-motorized use on all existing roads and fire breaks. Alternative D would also allow motorized use on 12.75 miles of roads. Mechanized recreation and motorized (Alternative D only) would be limited to designated roads and trails. The level of impact would depend on the future location of potential wind energy development within the Berryessa management area, and could be negligible to minor depending on the quantity and location of routes closed.

4.12.12.3 Geysers

Alternative A would continue current travel management actions and policies. Currently 6.31 miles of roads are open to street legal vehicle use only during the general deer hunting season, but are open year round to mechanized recreation. Alternative B would close all but 1.56 miles of these roads to all uses except administrative/official use, while Alternatives C (Preferred Alternative) and D would allow year-round mechanized, non-motorized and motorized use of these roads. The level of impact would depend on the future location of potential wind energy development within the Geysers management area, and could be negligible to minor depending on the quantity and location of routes closed.

4.12.13 Impacts on Wind Energy from Recreation Resources

Management goals and decisions regarding recreation have the potential to impact potential wind energy development in the proposed management areas. Programs potentially impacting wind energy development include allowable uses and facility development (route closure impacts are discussed in Section 4.12.12). Under all Alternatives, the impacts of these types of changes will be short-term, localized, and negligible to minor, depending on the extent of surface disturbance.

4.12.14 Impacts on Wind Energy from Soil Resources

Modern construction techniques designed to minimize disruption of natural drainage patterns, erosion and sedimentation will be applied to all new road and trail construction, and reroutes and maintenance of existing trails. This, in combination with the Wind Energy BMPs (see Appendix I), will minimize any potential impacts to wind energy developments. Any proposed route closure or re-routing could cause temporary impacts, but they would be negligible to minor. Impacts to potential wind energy

developments could be more severe depending on the location of the route closure and their relationship to the wind energy developments.

The presence of NOA may have minor to moderate impacts on potential wind energy developments, as regulations are set forth to minimize exposure.

Under all alternatives (Alternative C is the Preferred Alternative for all management areas), soil resources management decisions will have negligible impacts on potential wind energy development in the planning area.

4.12.15 Impacts on Wind Energy from Water Resources

Management goals for both water and soil resources include minimizing the amount of sediment entering the waterways of the planning area. Therefore, many of the policies, actions, and projects that would address this goal have been covered under Section 4.12.14 (Soil Resources).

Under all alternatives (Alternative C is the Preferred Alternative for all management areas), management actions regarding water resources will have negligible impacts on potential wind energy development in the Ukiah Field Office.

4.12.16 Potential Cumulative Impacts to Wind Energy

There are no major wind energy developments currently on lands managed by the Ukiah Field Office. However, with increasing populations in the surrounding areas, alternative energy sources are of concern. Because of the level of impact wind energy development has on its environment (see Appendix I), this potential energy source will experience higher demand during the life of this RMP. Potential wind energy development areas have been identified in the Wind Energy RFD (see Appendix J). Overall impacts to this potential energy resource and those areas identified in Appendix J will be negligible to minor, depending on the level of management for other resources in these areas. Depending on the Preferred Alternative and the final chosen alternative, it may be necessary to reduce the levels of development called for in the Wind Energy RFD.

4.13 IMPACTS ON TRAVEL MANAGEMENT AND ROUTE DESIGNATION

4.13.1 Impacts on Travel Management and Route Designation from Visual Resources Management

VRM has the potential to affect travel management and route designation by restricting or modifying the construction of new roads and trails in Class I and Class II areas, where the management objective is to preserve or retain the character of the landscape.

No significant impacts have been identified for the Cache Creek, Cedar Roughs, and Berryessa Management areas.

4.13.1.1 Cow Mountain

None of the alternatives listed would result in impacts to the travel networks, unless Alternative C or D under travel management and route designation is chosen. Alternatives C and D recommend construction of new trails. The more restrictive zoning classifications of Alternatives B (Preferred Alternative) and C, which designate the Backcountry Zones as Class I, could result in minor impacts if proposed trails had to be rerouted or relocated to other areas in order to meet VRM goals.

4.13.1.2 Knoxville

None of the alternatives listed would result in impacts to the travel networks, unless Alternative C or D under travel management and route designation is chosen.. Alternatives C and D recommend construction of new trails. The designation of certain areas as Class II in Alternatives A, B (Preferred Alternative), and C, could result in minor impacts if proposed trails had to be rerouted or relocated to other areas to meet VRM goals.

4.13.1.3 Indian Valley

Pending the results of the development of a Travel Management Plan and trail network for the area (as proposed in all alternatives), impacts could be major to minor. Alternative A proposes the most restrictive management under VRM Management, Class I. This could restrict designation and/or placement of new routes and restrict the number of existing routes that would be designated as open. It could also result in the closure and rehabilitation of some routes. Restrictions on new routes would have negligible impact in the short-term, but could affect traffic density if visitation to the area increases. Closing routes currently open would have an impact on public use by restricting travel to a smaller network of roads and trails, resulting in greater traffic density and potentially more user conflicts and negative experiences. The extent of the impacts would be determined by the extent and nature of the closures. Alternatives B, C (Preferred Alternative), and D are progressively less restrictive. Again, the extent of their impacts would be proportional to the extent of the changes implemented.

4.13.1.4 Stornetta

No significant impacts to travel management and route designation are anticipated for Alternative A. VRM Alternatives B (Preferred Alternative), C, and D could have minor localized impacts if Alternative D is chosen, as the latter calls for development of a trail network and additional accesses. Management of the Backcountry Zone and Middlecountry Zones as Class II, as proposed in VRM Alternatives B, C, and D, might affect the location and construction of these trails and accesses.

4.13.1.5 Geysers

No significant impacts to travel management and route designation are anticipated for Alternative A. VRM Alternatives A, B, C (Preferred Alternative), and D could have minor localized impacts if Alternative D is chosen, as the latter calls for development of a trail network and additional accesses. Management of the Backcountry Zone and Middlecountry Zones as Class II, as proposed in VRM Alternatives B, C, and D, might have minor effects on the location and construction of these trails and accesses.

4.13.1.6 Scattered Tracts

All the listed VRM alternatives have the potential to create minor localized impacts if Alternative C (Preferred Alternative) or D is chosen. These impacts would result from management of the various listed specific tracts as VRM Class II Zones, as prescribed in all VRM alternatives, which could affect the placement of the new accesses and possible trail network proposed in the Alternatives C and D.

4.13.2 Impacts on Travel Management and Route Designation from Wildlife and Fish

Various management activities can be expected to have minor, short-term, localized effects on the travel network in all of the management areas. Some of these will occur annually on a fairly predictable basis; some will occur unpredictably as conditions and events dictate. Scheduled disruptions could include temporary route closures for prescribed burning, noxious weed reduction, periods of high species-specific sensitivity (e.g., nesting or breeding seasons, periods of drought stress, etc.), as well as native plant reestablishment and water development projects, for example. Unscheduled disruptions such as wildfire suppression efforts and animal damage control measures may affect travel in some circumstances. Occasionally, closures with moderate to major impacts may occur to protect the habitat of sensitive species such as bald eagles. Habitat improvement projects have the potential to enhance populations of game species, which may attract more hunters and fishermen, thus increasing the traffic on roads and trails open to public use.

Alterative C is the Preferred Alternative for wildlife and fish management decisions in all management areas, except Cache Creek. Alternative B is the Preferred Alternative in the Cache Creek management area.

4.13.2.1 Cow Mountain

Alternative A, which calls for an evaluation of road maintenance in the Russian River watershed area, has the potential to have minor localized impacts on the roads and trails. Alternative B calls for "limiting inappropriate OHV use" in riparian and native oak habitat. This might include restricting currently legal OHV use which is recognized as having unacceptable impacts (as a hypothetical example, OHV use in campgrounds which is causing root compaction to oak trees), as well as curtailing illegal uses. Impacts of Alternative B should be localized and would be minor to moderate, depending on the extent of the area and the number of visitors affected.

4.13.2.2 Indian Valley

Alternatives C (Preferred Alternative) and D have provisions for the protection of bald eagles which may be found around the reservoir, closing the surrounding lands to all public use within ½ mile and ¼ mile respectively during the nesting season. Depending on where eagle nests are located relative to routes of travel and how heavily those routes are utilized, this could have a moderate to major impact on travel in the area.

4.13.2.3 Cache Creek

A seasonal closure to protect bald eagles in Wilson Valley will be instituted in 2005, closing the surrounding ½ mile area to all public use. Depending on the number and extent of routes that are

located within this season closure area, as well as their use level, the impacts to travel could be moderate to major.

4.13.2.4 Stornetta

Alternative A lists possible OHV restrictions to benefit the Western Snowy Plover recovery. Depending on the type, season, extent and/or popularity of the OHV use, and the types of restrictions placed upon it, the effects of this alternative have the potential to permanently alter travel patterns, and could be moderate to major.

4.13.3 Impacts on Travel Management and Route Designation from Vegetation Management

All of the vegetation management techniques employed in the various alternatives, including prescribed fire, mechanical methods (e.g., mowing, chaining, plowing, mastication), livestock grazing, and the use of pesticides, have the potential to disrupt and thus impact public and administrative use of roads and trails. The impact of these disruptions, however, would be negligible in most cases and at worst should be minor, short-term, and localized.

4.13.3.1 Common to All Management Areas

Prescription burning is allowed or called for in all alternatives. Some roads and trails may have to be closed temporarily to public use or all use in order to accomplish the burn safely. Some roads and trails that remain open may become difficult or unpleasant to use because of smoke. The impacts of prescription burning will therefore be minor to moderate, although short-term and localized, depending the size and location of the burns.

4.13.3.2 Cow Mountain

Prescription burning is listed in all alternatives. Some roads and trails may have to be closed temporarily to public use or all use in order to accomplish these burns safely. Some roads and trails that remain open may become difficult or unpleasant to use because of smoke. The impacts of prescription burning will therefore be minor to moderate, although short-term and localized, depending the size, duration, and location of the burns. Alternative B calls for the least amount of acreage to be burned; Alternatives A, C (Preferred Alternative), and D recommend increasing amounts. The impacts of the alternatives would increase with the amount of acreage burned, although the relationship would not be direct. Some minor disruptions to the use of roads and trails might occur as a result of the use of pesticides in Alternatives C and D. These impacts would be short-term and localized.

4.13.3.3 Knoxville

Alternatives A and B allow prescription burning, but only Alternatives C (Preferred Alternative) and D actively recommend it. Pesticides and mechanical destruction of noxious weeds are not used in Alternatives A and B but are employed in Alternatives C and D. No impacts are anticipated from Alternatives A and B (i.e., if there is no prescribed burning); some minor, short-term, localized impacts to the use of roads and trails may occur with Alternatives C or D (i.e., through the use of prescribed burning, pesticides or mechanical destructions).

4.13.3.4 Indian Valley

Alternatives A and B allow prescription burning, but only Alternatives C (Preferred Alternative) and D actively recommend it. Pesticides and mechanical destruction of noxious weeds are not used in Alternatives A and B but are employed in Alternatives C and D. No impacts are anticipated from Alternatives A and B (i.e., if there is no prescribed burning); some minor, short-term, localized impacts to the use of roads and trails may occur with Alternatives C or D (i.e., through the use of prescribed burning, pesticides or mechanical destructions).

4.13.3.5 Cache Creek

Prescription burning is listed in all alternatives. Some roads and trails may have to be closed temporarily to public use or all use in order to accomplish these burns safely. Some roads and trails that remain open may become difficult or unpleasant to use because of smoke. The impacts of prescription burning will therefore be minor to moderate (although short-term and localized) depending the size, duration, and location of the burns. Alternative B calls for a range from the least amount of acreage to be burned to more than Alternative A; Alternatives C (Preferred Alternative), and D recommend greater amounts. The impacts of the alternatives would increase with the amount of acreage burned, although the relationship would not necessarily be direct. Some minor disruptions to the use of roads and trails might occur as a result of the use of pesticides and non-fire fuels in Alternatives C and D. These impacts would be short-term and localized.

4.13.3.6 Cedar Roughs

Alternatives A and B allow prescription burning, but only Alternatives C (Preferred Alternative) and D actively recommend it. Pesticides and mechanical destruction of noxious weeds are not used in Alternatives A and B but are employed in Alternatives C and D. No impacts are anticipated from Alternatives A and B (i.e., if there is no prescribed burning); some minor, short-term, localized impacts to the use of roads and future trails may occur with Alternatives C or D (i.e., through the use of prescribed burning, pesticides or mechanical destructions).

4.13.3.7 Berryessa

Alternatives A and B allow prescription burning, but only Alternatives C (Preferred Alternative) and D actively recommend it. Pesticides and mechanical destruction of noxious weeds are not used in Alternatives A and B but may be employed in Alternatives C and D. No impacts are anticipated from Alternatives A and B (i.e., if there is no prescribed burning); some minor, short-term, localized impacts to the use of roads may occur with Alternatives C or D (i.e., through the use of prescribed burning, pesticides or mechanical destructions).

4.13.3.8 Stornetta

Alternatives A and B allow prescription burning, but only Alternatives C (Preferred Alternative) and D actively recommend it. Pesticides and mechanical destruction of noxious weeds are not used in Alternatives A and B but are employed in Alternatives C and D. No impacts are anticipated from Alternatives A and B (i.e., if there is no prescribed burning); some minor, short-term, localized impacts to

the use of roads and trails may occur with Alternatives C or D (i.e., through the use of prescribed burning, pesticides or mechanical destructions).

4.13.3.9 Geysers

Alternatives A and B allow prescription burning, but only Alternatives C (Preferred Alternative) and D actively recommend it. Pesticides and mechanical destruction of noxious weeds are not used in Alternatives A and B but may be employed in the future (if noxious weeds are inventoried) in Alternatives C and D. No impacts are anticipated from Alternatives A and B (i.e., if there is no prescribed burning); some minor, short-term, localized impacts to the use of roads and trails may occur with Alternatives C or D (i.e., through the use of prescribed burning, pesticides or mechanical destructions).

4.13.3.10 Scattered Tracts

Alternatives A and B allow prescription burning, but only Alternatives C (Preferred Alternative) and D actively recommend it. Pesticides and mechanical destruction of noxious weeds are not used in Alternatives A and B but are employed in Alternatives C and D. No impacts are anticipated from Alternatives A and B (i.e., if there is no prescribed burning); some minor, short-term, localized impacts to the use of roads and trails may occur with Alternatives C or D (i.e., through the use of prescribed burning, pesticides or mechanical destructions).

4.13.4 Impacts on Travel Management and Route Designation from Riparian and Wetland Resources

The effect of any road and trail network on the health of nearby riparian and wetland areas will always be a concern. Unimproved crossings and poorly maintained, eroding routes which have the potential to add sedimentation to creeks and streams must be avoided where possible and corrected when necessary. The actions necessary to protect wetland resources may therefore have an effect on travel management. For example, as stream crossings are constructed or hardened travel on that route will have to be halted, rerouted, and/or temporary stream crossing structures installed to minimize turbidity. The impact of such activities should typically be short-term and localized.

No significant impacts to travel management and route designation have been identified from the alternatives (Alterantive C is the Preferred Alternative in all management areas) in this section.

4.13.5 Impacts on Travel Management and Route Designation from Cultural Resources

Many of the routes in the travel network administered by the Ukiah Field Office were established by the public (including commercial permittees) as various needs arose, e.g., to access a mine, ranching facility, an area for hunting, etc. These routes were established long before current standards of protection for cultural and historic resources were in place. The ranchers, miners, sportsmen and recreationists who first established some of these roads and trails were often unaware or unmindful of the cultural and historic resources impacted by the routes they chose. Current standards of pre-construction project review serve to prevent or mitigate significant impact on these resources, but damage done by old routes can be arrested via route closures or restrictions, or can be monitored to prevent further deterioration.

4.13.5.1 Common to All Management Areas

Site monitoring, law enforcement patrols, and consultation with Native American tribes regarding protection of traditional cultural properties and resources have the potential to impact travel management and access in all areas. If public or administrative use is causing deterioration of any of these types of resources the affected portion of the travel network might need to be stabilized, rerouted or closed. The routing of proposed new roads and trails might need to be changed to avoid resource damage. The effects of these changes could be minor to major, depending on the nature of the resource, the nature of the route and its level of use, and the nature of the protection measures deemed necessary. For the foreseeable future, impacts should be minor.

4.13.5.2 Cow Mountain

Alternative A offers general protections to cultural and historic resources by continuing present levels of legal compliance, site monitoring, law enforcement patrols, and consultation with Native American tribes. Alternative B offers a greater level of protection than Alternative A for known sites in the South Cow Mountain area by adding focused law enforcement patrols, increased site monitoring, and increased collaboration with Native American tribes. Alternatives C (Preferred Alternative) and D add development of a Regional Overview for the entire Cow Mountain area and identification of at-risk sites (with stabilization projects as needed) to the general protections in Alternative A. Depending on the results of these measures, localized long-term impacts to the travel network may occur. The effects of these changes could be minor to major, depending on the nature of the resource, the nature of the route and its level of use, and the nature of the protection measures deemed necessary. For the foreseeable future, impacts should be minor. Education and interpretation efforts may mitigate or prevent some impacts. Alternatives C and D propose the construction of new trails in the Cow Mountain area, the location of which could be affected by their potential impact on cultural and historic resources. The impacts of avoiding sensitive resources should be minor. The effort to avoid these resources may prevent the construction of certain routes and prevent motorized access to some areas, however.

4.13.5.3 Knoxville

Alternative A offers general protections to cultural and historic resources by continuing present levels of legal compliance, site monitoring, law enforcement patrols, and consultation with Native American tribes. Alternative B offers a greater level of protection than Alternative A by adding focused law enforcement patrols, increased site monitoring, and increased collaboration with Native American tribes. Alternatives C (Preferred Alternative) and D add development of a Regional Overview for the Knoxville area and identification of at-risk sites (with stabilization projects as needed) to the general protections in Alternative A. Depending on the results of these measures, localized long-term impacts to the travel network may occur. The effects of these changes could be minor to major, depending on the nature of the resource, the nature of the route and its level of use, and the nature of the protection measures deemed necessary. For the foreseeable future, impacts should be minor. Education and interpretation efforts may mitigate or prevent some impacts. Alternatives C and D propose the construction of new trails in the Knoxville area, the location of which could be affected by their potential impact on cultural and historic resources. The impacts of avoiding sensitive resources should be minor. The effort to avoid these resources may prevent the construction of certain routes and prevent motorized access to some areas, however.

4.13.5.4 Indian Valley

Alternative A offers general protections to cultural and historic resources by continuing present levels of legal compliance, site monitoring, law enforcement patrols, and consultation with Native American tribes. Alternative B offers a greater level of protection than Alternative A by adding focused law enforcement patrols, increased site monitoring, and increased collaboration with Native American tribes. Alternatives C (Preferred Alternative) and D add identification of at-risk sites (with stabilization projects as needed) to the general protections in Alternative A. Depending on the results of these measures, localized long-term impacts to the travel network may occur. The effects of these changes could be minor to major, depending on the nature of the resource, the nature of the route and its level of use, and the nature of the protection measures deemed necessary. For the foreseeable future, impacts should be minor. Education and interpretation efforts may mitigate or prevent some impacts.

4.13.5.5 Cache Creek

Alternative A offers general protections to cultural and historic resources by continuing present levels of legal compliance, site monitoring, law enforcement patrols, and consultation with Native American tribes. Alternative B offers a greater level of protection than Alternative A for known sites in the Cache Creek Natural Area by adding focused law enforcement patrols, increased site monitoring, and increased collaboration with Native American tribes. Alternatives C (Preferred Alternative) and D add a proactive approach to archaeological surveying and evaluations and NRHP nominations for these newly acquired lands as well as identification of at-risk sites (with stabilization projects as needed) to the general protections in Alternative A. Depending on the results of these measures, localized long-term impacts to the travel network may occur. The effects of these changes could be minor to major, depending on the nature of the resource, the nature of the route and its level of use, and the nature of the protection measures deemed necessary. For the foreseeable future, impacts should be minor. Education and interpretation efforts may mitigate or prevent some impacts.

4.13.5.6 Cedar Roughs

Alternative A offers general protections to cultural and historic resources by continuing present levels of legal compliance, site monitoring, law enforcement patrols, and consultation with Native American tribes. Alternative B offers a greater level of protection than Alternative A by adding focused law enforcement patrols, increased site monitoring, and increased collaboration with Native American tribes. Alternatives C (Preferred Alternative) and D add identification of at-risk sites (with stabilization projects as needed) to the general protections in Alternative A. As there is no public vehicular access to the area, the impacts of these measures should be negligible to minor. Education and interpretation efforts may mitigate or prevent some impacts.

4.13.5.7 Berryessa

Alternative A offers general protections to cultural and historic resources by continuing present levels of legal compliance, site monitoring, law enforcement patrols, and consultation with Native American tribes. Alternative B offers a greater level of protection than Alternative A by adding focused law enforcement patrols, increased site monitoring, and increased collaboration with Native American tribes. Alternatives C (Preferred Alternative) and D add identification of at-risk sites (with stabilization projects as needed) to the general protections in Alternative A. As there is no public vehicular access to the area, the impacts of

these measures should be negligible to minor. Education and interpretation efforts may mitigate or prevent some impacts.

4.13.5.8 Stornetta

Alternative A offers general protections to cultural and historic resources by continuing present levels of legal compliance, site monitoring, law enforcement patrols, and consultation with Native American tribes. Alternative B offers a greater level of protection than Alternative A for known sites in the Cache Creek Natural Area by adding focused law enforcement patrols, increased site monitoring, and increased collaboration with Native American tribes. Alternatives C and D add a proactive approach to archaeological surveying and evaluations and NRHP nominations for these newly acquired lands as well as identification of at-risk sites (with stabilization projects as needed) to the general protections in Alternative A. Depending on the results of these measures, localized long-term impacts to the travel network may occur. The effects of these changes could be minor to major, depending on the nature of the resource, the nature of the route and its level of use, and the nature of the protection measures deemed necessary. For the foreseeable future, impacts should be minor. Education and interpretation efforts may mitigate or prevent some impacts. Alternative D proposes opening existing roads to public use and the construction of new accesses and a trail network. These new uses have the potential to impact cultural and historic resources, which would in turn affect the implementation of these new programs. The impacts of avoiding sensitive resources should be minor. The effort to avoid these resources may prevent the construction of certain routes and prevent motorized access to some areas, however. Education and interpretation efforts may mitigate or prevent some impacts.

4.13.5.9 Geysers

Alternative A offers general protections to cultural and historic resources by continuing present levels of legal compliance, site monitoring, law enforcement patrols, and consultation with Native American tribes. Alternative B offers a greater level of protection than Alternative A by adding focused law enforcement patrols, increased site monitoring, and increased collaboration with Native American tribes. Alternatives C (Preferred Alternative) and D add identification of at-risk sites (with stabilization projects as needed) to the general protections in Alternative A. As there is limited public vehicular access to the area, the impacts of these measures should be negligible to minor. Alternatives C and D recommend expanding public access and, in D, development of a trail system. These new uses have the potential to impact cultural and historic resources, which would in turn affect the implementation of these new programs. The impacts of avoiding sensitive resources should be minor. The effort to avoid these resources may prevent the construction of certain routes and prevent motorized access to some areas, however. Education and interpretation efforts may mitigate or prevent some impacts.

4.13.5.10 Scattered Tracts

Alternative A offers general protections to cultural and historic resources by continuing present levels of legal compliance, site monitoring, law enforcement patrols, and consultation with Native American tribes. Alternative B offers a greater level of protection than Alternative A by adding focused law enforcement patrols, increased site monitoring, and increased collaboration with Native American tribes. Alternatives C (Preferred Alternative) and D add identification of at-risk sites (with stabilization projects as needed) to the general protections in Alternative A. As there is limited public vehicular access to these areas, the impacts of these measures should be negligible to minor. Education and interpretation efforts may

mitigate or prevent some impacts. Alternatives C and D recommend development of new accesses, and in D, the establishment of trail networks in some areas. These new uses have the potential to impact cultural and historic resources, which would in turn affect the implementation of these new programs. The impacts of avoiding sensitive resources should be minor. The effort to avoid these resources may prevent the construction of certain routes and prevent motorized access to some areas, however. Education and interpretation efforts may mitigate or prevent some impacts.

4.13.6 Impacts on Travel Management and Route Designation from Lands and Realty

4.13.6.1 Common to All Management Areas

Impacts to travel management and route designation would occur when public lands were acquired, exchanged or otherwise disposed of, if the acreage involved featured roads or trails or if newly acquired acreage offered opportunities for construction of new roads or trails. These impacts could range from positive to negative depending upon whether land acquisitions or disposals were involved. Also, depending on the size of the lands changing status, the size of their existing or potential travel networks and whether or not these networks offered linkages to other travel networks, the impacts could range from negligible to major. In Alternatives A, B, and C new ROW are to be granted (whenever possible) only on existing routes or adjacent to them, thus the impacts of these easements should be negligible to minor. Alternative D, in all cases, allows no new ROW, so no impacts would occur.

4.13.6.2 Cow Mountain

Alternatives A and C offer opportunities for acquisition of new lands. Coupled with travel management and route designation Alternative C or D, both of which advocate the construction of new roads and trails, any combination of these in the preferred alternative could result in an expansion of the travel network. The impacts would be positive, and could be minor to moderate, depending on the size and nature of the new acquisitions and the potential for routes that they offer.

4.13.6.3 Knoxville

Alternatives A and B offer opportunities for acquisition of new lands. Alternative C (Preferred Alternative) or D, both of which advocate the construction of new roads and trails, any combination of these in the preferred alternative could result in an expansion of the travel network. The impacts would be positive, and could be minor to moderate, depending on the size and nature of the new acquisitions and the potential for routes that they offer.

4.13.6.4 Indian Valley

Alternatives A and B offer opportunities for acquisition of new lands. Alternative C (Preferred Alternative) or D, both of which advocate the construction of new roads and trails, any combination of these in the preferred alternative could result in an expansion of the travel network. The impacts would be positive, and could be minor to moderate, depending on the size and nature of the new acquisitions and the potential for routes that they offer.

4.13.6.5 Cache Creek

Alternatives A and C (Preferred Alternative) offer opportunities for the acquisition of new lands. No new roads are proposed for this area under any of the travel management and route designation Alternatives. All alternatives recommend development of a Trails Plan. Should that plan include construction of new trails, the travel network would be expanded. This impact would be positive, and could be minor to major, depending on the amount of land acquired and the extent of the trail network added.

4.13.6.6 Cedar Roughs

Alternatives A and B offer opportunities for acquisition of new lands. Alternative D, which advocates the construction of new accesses and trails, any combination of these in the preferred alternative could result in an expansion of the travel network. The impacts would be positive, and could be minor to moderate, depending on the size and nature of the new acquisitions and the potential for new accesses and routes that they offer.

4.13.6.7 Berryessa

Alternatives A and B offer opportunities for acquisition of new lands. Alternatives C (Preferred Alternative), which advocates opening the road network to public use, or D, which allows public use and builds new access and trails, any combination of these in the preferred alternative could result in an expansion of the travel network. The impacts would be positive, and could be minor to moderate, depending on the size and nature of the new acquisitions and the potential for accesses and routes that they offer.

4.13.6.8 Stornetta

Alternative B calls for acquisition of new lands. Alternative D would open the existing roads to public vehicular traffic and construct a new trail system. If these two were combined in the preferred alternative, impacts would positive and could be minor to moderate, depending on the size and nature of the new acquisitions and the potential for trails that they offer.

4.13.6.9 Geysers

No new acquisitions are anticipated in this area. Certain lands may be disposed of in Alternative B. Public access is currently limited, so the impacts of this disposition would be negative but minor. Alternative C (Preferred Alternative), however, would open the roads to public use year round, and D would go even further by developing new accesses and trails. The impacts of the disposition of the property would be negative, in proportion to the development of the travel network on those lands.

4.13.6.10 Scattered Tracts

No new acquisitions are anticipated in this management area. Certain lands may be disposed of in Alternatives A, B (Preferred Alternative), and C. Public access is currently limited, so the negative impacts of this disposition would be minor. Alternative C, however, would open some of the tracts to public use, and D would go even further by developing new accesses and trails. The impacts of the

disposition of the property would be negative, in proportion to the development of the travel network on those lands.

4.13.7 Impacts on Travel Management and Route Designation from Special Designations

Designation of lands as WSAs, ACECs, or SRMAs has the potential to affect travel management and route designation. As they are generally established to protect sensitive resources, motorized travel may be restricted and some routes may be closed.

Alternative C is the Preferred Alternative for special designations management decisions in all management areas, except Cedar Roughs, Berryessa, and the Geysers. The Preferred Alternative for Berryessa and the Geysers is Alternative A, while Alternative B is preferred for Cedar Roughs.

4.13.7.1 Knoxville

Alternatives A, B, and C would have no impact on current public or administrative uses of the area. Although Alternatives B and C propose the creation of ACECs of 1,756 acres and 5,236 acres respectively, there are currently no OHV routes that would be affected by either. Future uses might be affected, as the new roads and trails proposed in Transportation Management and Access Alternatives C and D would not be constructed in these areas. These effects would be negligible if the new routes could simply be constructed elsewhere. If not, then the impact would be proportional to the amount of new route construction forestalled. Alternative D proposes that the entire Knoxville area, 24,346 acres, be designated an ACEC. Impacts of this action would be minor to major, long-term, and pervasive, depending on the extent of restrictions placed on vehicular travel in the ACEC. If restrictions were moderate to severe, many of the visitors who currently use the area would travel to other places for their recreation, thus increasing traffic and user conflicts at South Cow Mountain and other OHV destinations.

4.13.7.2 Indian Valley

Alternatives B, C and D propose the expansion of the Indian Valley Brodiaea ACEC. Alternatives C and D propose the creation of the Walker Ridge ACEC. Alternative C would have minor long-term impact on current public use of Walker Ridge ACEC, as the current light use by OHVs would be eliminated. Alternative D would include 20 miles of roads currently used by OHVs in the expanded ACEC. The effects of this inclusion would be long-term and pervasive. The routes currently used by OHVs would be converted to non-motorized use. OHV use would be adversely affected and other OHV areas could experience an increase in traffic as these visitors sought recreational opportunities elsewhere. Because current OHV use is light these impacts should be minor. Non-motorized use would be positively impacted as mountain bikers, equestrians, and hikers would enjoy new opportunities without having to share them with OHVs.

4.13.7.3 Cedar Roughs

As there is no public vehicular access to the area, expansion of the current ACEC as proposed in Alternatives B, C, and D should have negligible impact. If all vehicle use were restricted, there would be a minor impact on administrative use.

4.13.7.4 Stornetta

Alternatives B, C, and D propose an ACEC of 887 acres. Use of motorized equipment would be prohibited in the ACEC. There is currently no public vehicular access to the property, so there would be no impacts unless administrative vehicles were also kept out of the ACEC, which would have a minor impact. travel management and route designation Alternative D would open the existing roads to the public and create new accesses and trails. If this were included in the preferred alternative, there would be minor to moderate impact if the routes in the ACEC were closed and the new trails had to be routed around it.

4.13.7.5 Scattered Tracts

Alternatives B, C, and D propose the creation of four new ACECs in the Scattered Tracts: Black Forest, Cedars of Sonoma County, Lost Valley, and Quail Ridge. There is no public access to the Cedars of Sonoma County or Quail Ridge, therefore creation of the ACEC would have negligible public impact. There might be minor administrative impact, depending on what restrictions were placed on travel in the ACECs. The existing but closed OHV route to the ACEC proposed for Lost Valley Meadows would remain closed if the ACEC is created, thus there would be no significant impact. Black Forest ACEC should result in no significant impacts to public use. There may be minor administrative impacts in all areas.

4.13.8 Impacts on Travel Management and Route Designation from Forest Management

No impacts to travel management and route designation are anticipated from Forest Management.

4.13.9 Impacts to Travel Management and Route Designation from Livestock Grazing Management

4.13.9.1 Common to All Management Areas

The presence of livestock on public lands has some potential to affect public and administrative use of roads and trails, as some gates may have to be kept closed and certain roads may be blocked when the permittee moves his stock. These impacts should be minor, short-term, and localized. Closing out a grazing permit or allotment, or adding an allotment or expanding a permit could have minor to moderate impacts to travel management in that the need for a route or routes could be eliminated or added. The exact implications of such actions would have to be analyzed on a case by case basis. Some visitors are uncomfortable with the presence of livestock and may avoid areas where grazing is practiced, thus decreasing traffic in certain areas but increasing it in others. The impacts of such avoidance should be minor.

4.13.9.2 Cow Mountain

Alternative A (Preferred Alternative) would only allow livestock use for weed control and/or maintenance of fire lines. Alternative B would allow grazing for weed control and/or hazardous fuels reduction. These uses, if they happen, would have minor, localized impacts on the travel network. Alternative C would allow grazing on certain allotments, and Alternative D would open the entire area to livestock. The impacts of these grazing leases would be proportional to the extent of the areas involved, the numbers of animal units allowed and whether or not they would be present on the roads and trails,

the extent to which the permittee used the travel network for himself and to drive his stock, and the extent of administrative monitoring.

4.13.9.3 Knoxville

Alternative A would allow current leases to continue, and further allow grazing use for weed control and/or maintenance of fire lines or prescribed burn areas outside the existing allotments. Alternative B would eliminate current leases when they expire, and limit other grazing for weed control and/or hazardous fuels reduction. The precise effect on travel management of allowing certain grazing leases to expire or disallowing grazing allotments would be determined by the level of use by the permitees of the routes in the allotment and the effects of that use on other uses in that allotment. The net effect of such changes would likely be minor to moderate. The impacts of grazing for the additional uses should be minor and localized. Alternative C is the Preferred Alternative.

4.13.9.4 Indian Valley

Alternative A would allow the current lease to continue, and further allow grazing use for weed control and/or maintenance of fire lines or prescribed burn areas outside the existing allotment. Alternative B would eliminate the current lease when it goes null, and limit new grazing to weed control and/or hazardous fuels reduction. The precise effect on travel management of allowing certain grazing leases to expire or disallowing grazing allotments would be determined by the level of use by the permitees of the routes in the allotment and the effects of that use on other uses in that allotment. The net effect of such changes would likely be minor to moderate. The impacts of grazing for the additional uses should be minor and localized. Alternative C is the Preferred Alternative.

4.13.9.5 Cache Creek

There are no current leases in the Cache Creek Natural Area. Alternatives A (Preferred Alternative), B, C, and D would allow grazing for weed control and/or the maintenance of fire lines and former prescribed burn areas. All facilities for livestock would be temporary. The impacts of this grazing, should it occur, would be minor, localized, and short-term.

4.13.9.6 Cedar Roughs

Alternative A would allow the current lease in Maxwell Creek to continue, and further allow grazing use for weed control and/or maintenance of fire lines or prescribed burn areas outside the existing allotment. Alternative B would eliminate the current lease when it expires, and limit new grazing to weed control and/or hazardous fuels reduction. Alternatives C (Preferred Alternative) would allow the Maxwell Creek allotment to continue, and would allow additional use for weed control and hazardous fuel reduction. Alternative D would allow Maxwell Creek to continue, and would allow grazing of areas burned in wild fires under certain conditions. As there is no current public access to the property, impacts to public use from all Alternatives would be negligible. Impacts to administrative use should be minor. Should the area be opened to public use, as is proposed in travel management and route designation Alternative D, impacts from grazing could be minor to moderate, depending on the extent of the areas grazed and the presence of the livestock on the routes.

4.13.9.7 Berryessa

Alternative A would allow the current leases to continue, and further allow grazing use for weed control and/or maintenance of fire lines or prescribed burn areas outside the existing allotment. Alternative B would eliminate the current leases when they expire, and limit new grazing to weed control and/or hazardous fuels reduction. Alternative C (Preferred Alternative) would allow the Rocky Ridge allotment to continue, but would discontinue the Portuguese Canyon lease when it expires. It would allow areas outside these allotments to be available for weed control and hazardous fuels reduction. Alternative D would allow all areas to be available for grazing, including areas burned in wildfires under certain conditions. As there is no current legal public access, impacts to public use under all these alternatives would be negligible. Impacts to administrative use would be minor. Should the area be opened to public use, as is proposed in travel management and route designation Alternative D, impacts from grazing could be minor to moderate, depending on the extent of the areas grazed and the presence of the livestock on the routes.

4.13.9.8 Stornetta

Alternatives A and B state that the area will be grazed until July 1, 2014, as per acquisition documents. At that time, the area will be assessed to determine if grazing should continue. Pending completion of the assessment, grazing would only be allowed as a tool for weed control and hazardous fuels reduction. Alternative C (Preferred Alternative) states that after July 1, 2014, the area will be considered for livestock grazing, and that construction of facilities will be limited. Alternative D states that after July 1, 2014, the area will be available for grazing. The impact of all alternatives will be negligible until the summer of 2014, as there will be no change. After that time, the impacts will depend on whether or not grazing is continued, and whether or not new public accesses are allowed and new trails constructed, as is proposed in travel management and route designation Alternative D.

4.13.9.9 Geysers

There are no current leases in the Geysers area. Alternatives A (Preferred Alternative) and B would allow grazing through contracting use or free use for weed eradication and/or maintenance of fire lines and prescribed burn areas. As public use of the area is limited, the impact of these Alternatives on both public and administrative use should be minor.

4.13.9.10 Scattered Tracts

Alternative A would allow the current leases to continue, and further allow grazing use for weed control and/or maintenance of fire lines or prescribed burn areas outside the existing allotment. Alternative B would eliminate the current leases when they expire, and limit new grazing to weed control and hazardous fuels reduction. Alternative C (Preferred Alternative) would allow the current allotments to continue to be available, with livestock use outside these areas only for weed control and/or hazardous fuels reduction. Alternative D would allow the Richter allotment to be available, as would areas not designated for disposal. Areas designated for disposal would be available as long as they were in public ownership. Areas burned in wildfires would be available under certain conditions. As public access to the Scattered Tracts is very limited, the impacts of all these alternatives would be minor to both public and administrative uses.

4.13.10 Impacts on Travel Management and Route Designation from Fire Management

An extensive prescribed burning plan for the entire Planning Area has been prepared and will be used. Implementation of this program has the potential to periodically disrupt and thus impact public and administrative use of roads and trails. The impact of these disruptions would be negligible in most cases, however, and at worst should be minor, short-term, and localized. Alternative C is the Preferred Alternative for fire management decisions (prescribed burning and mechanical treatment) throughout the planning area.

4.13.10.1 Common to All Management Areas

Prescription burning is allowed or called for in all alternatives. Some roads and trails may have to be closed temporarily to public use or all use in order to accomplish the burn safely. Some roads and trails that remain open may become difficult or unpleasant to use because of smoke. The impacts of prescription burning will therefore be minor to moderate, although short-term and localized, depending the size and location of the burns and the extent of the routes affected.

4.13.10.2 Cow Mountain

Prescription burning is listed in all alternatives. Some roads and trails may have to be closed temporarily to public use or all use in order to accomplish these burns safely. Some roads and trails that remain open may become difficult or unpleasant to use because of smoke. The impacts of prescription burning will therefore be minor to moderate, although short-term and localized, depending the size, duration, and location of the burns and the extent of the routes affected. Alternative B calls for the least amount of acreage to be burned; Alternatives A, C, and D recommend increasing amounts. The impacts of the Alternatives would increase with the amount of acreage burned, although the relationship would not necessarily be direct.

4.13.10.3 Knoxville

Alternatives A and B allow prescription burning, but only Alternatives C and D actively recommend it. No impacts are anticipated from Alternatives A and B if there is no burning; some minor, short-term, localized impacts to the use of roads and trails may occur with Alternatives C or D (as well as A and B, if burning takes place).

4.13.10.4 Indian Valley

Alternatives A and B allow prescription burning, but only Alternatives C and D actively recommend it. No impacts are anticipated from Alternatives A and B if there is no burning; some minor, short-term, localized impacts to the use of roads and trails may occur with Alternatives C or D (as well as A and B, if burning takes place).

4.13.10.5 Cache Creek

Prescription burning is listed in all alternatives. Some roads and trails may have to be closed temporarily to public use or all use in order to accomplish these burns safely. Some roads and trails that remain open may become difficult or unpleasant to use because of smoke. The impacts of prescription burning will therefore be minor to moderate (although short-term and localized) depending the size, duration, and location of the burns and the extent of the routes affected. Alternative B calls for a range from the least

amount of acreage to be burned to more than Alternative A; Alternatives C, and D recommend greater amounts. The impacts of the Alternatives would increase with the amount of acreage burned, although the relationship would not necessarily be direct.

4.13.10.6 Cedar Roughs

Alternatives A and B allow prescription burning, but only Alternatives C and D actively recommend it. No impacts are anticipated from Alternatives A and B if no burning occurs; some minor, short-term, localized impacts to the use of roads and future trails may occur with Alternatives C or D (as well as A and B, if burning takes place).

4.13.10.7 Berryessa

Alternatives A and B allow prescription burning, but only Alternatives C and D actively recommend it. No impacts are anticipated from Alternatives A and B if no burning occurs; some minor, short-term, localized impacts to the use of roads may occur with Alternatives C or D (as well as A and B, if burning takes place).

4.13.10.8 Stornetta

Alternatives A and B allow prescription burning, but only Alternatives C and D actively recommend it. No impacts are anticipated from Alternatives A and B if no burning takes place; some minor, short-term, localized impacts to the use of roads and trails may occur with Alternatives C or D (as well as A and B, if burning takes place).

4.13.10.9 Geysers

Alternatives A and B allow prescription burning, but only Alternatives C and D actively recommend it. No impacts are anticipated from Alternatives A and B if no burning takes place; some minor, short-term, localized impacts to the use of roads and trails may occur with Alternatives C or D (as well as A and B, if burning takes place).

4.13.10.10 Scattered Tracts

Alternatives A and B allow prescription burning, but only Alternatives C and D actively recommend it. No impacts are anticipated from Alternatives A and B if no burning takes place; some minor, short-term, localized impacts to the use of roads and trails may occur with Alternatives C or D (as well as A and B, if burning takes place).

4.13.11 Impacts to Travel Management and Route Designation from Minerals

No specific significant impacts to any of the management areas were identified in the alternatives. However, any flux in mineral extraction activity, whether an increase or decrease could affect the need for certain existing routes or affect the need for additional routes and therefore have minor or moderate impacts on travel management and route designation. Potential future impacts in areas available to leases for mineral extraction could result from user conflicts, as well. Roads used to maintain a commercial mining facility could carry more traffic than they are currently experiencing, for example. Some roads or

trails might need to be re-routed or even closed to public use for safety reasons—to protect the public from hazardous equipment, open pits, chemical retention basins, etc., or to protect expensive commercial equipment from theft or vandalism. Some routes might literally be destroyed by the commercial operation, such as a road through an area leased for sand and gravel extraction (Please refer to Appendices for F, G, and H for mineral RFDs). The impacts of these conflicts and changes to the travel network would be minor to major, depending on the extent of the area and routes affected and their levels of use.

Alternative A (current situation) is the Preferred Alternative for mineral management decisions (fluid/leasable and solid minerals) in the entire planning area, except for Cache Creek, Cedar Roughs, and Stornetta (solid minerals). Alternative C is the Preferred Alternative for the Cache Creek and Cedar Roughs management areas (fluid/leasable and solid minerals), and Alternative B is the Preferred Alternative for solid minerals management decisions in Stornetta.

4.13.12 Impacts to Travel Management and Route Designation from Wind Energy

No specific significant impacts to any of the management areas were identified in the alternatives. However, any flux in mineral extraction activity, whether an increase or decrease could affect the need for certain existing routes or affect the need for additional routes and therefore have minor or moderate impacts on travel management and route designation. Potential future impacts in areas available to leases for mineral extraction could result from user conflicts, as well. Roads used to maintain a commercial facility could carry more traffic than they are currently experiencing, for example. Some roads or trails might need to be re-routed or even closed to public use for safety reasons—to protect the public from hazardous equipment like rotating windfarm blades, electrical installations, etc., or to protect expensive equipment such as solar panels from theft or vandalism. Some routes might literally be destroyed by the commercial operation, such as a road through an area to be covered by wind generators. The impacts of these conflicts and changes to the travel network could be minor to major, depending on the extent of the area and routes affected and their levels of use.

Alternative B is the Preferred Alternative for wind energy management decisions in Cow Mountain, Cache Creek, Cedar Roughs, Stornetta, the Geysers, and the Scattered Tracts. Alternative D is the Preferred Alternative for the Knoxville, Indian Valley, and Berryessa management areas.

4.13.13 Impacts on Travel Management and Route Designation from Travel Management and Route Designation

The Ukiah Field Office administers a network of hundreds of miles of roads and trails, much of it unpaved. These routes provide access to the management areas discussed below for the various purposes and activities which have traditionally been allowed on BLM land, such as: mining; livestock operations; range improvements; utility and communications facilities; wildfire prevention, suppression, and management; improvements for wildlife; recreation; monitoring stations; and passage to private and other government lands. Various types of management actions have the potential to affect the level of access to and use of Ukiah Field Office lands. Such actions might include road or trail closures and reroutes, the development of new roads to be used for administrative or public purposes, changes in the number of acres open to off-road travel, changes in level of route maintenance, or changes in specific restrictions (e.g., seasonal restrictions, speed limits, etc.).

In the context of travel management and route designation, the terms used to discuss levels of impact have been defined as follows:

Negligible: Impacts on travel and access would not be noticeable as there would be no discernible effect on miles of routes designated as open, limited in use, or completely closed. While a few roads and/or trails (or sections of roads and trails) could be improved, upgraded, or re-routed, overall road conditions would essentially remain the same.

Minor: Impacts on travel and access would be slightly noticeable in certain areas, although there would be no substantive effect on the overall miles of routes designated as open, limited in use, or completely closed throughout the planning area. While numerous roads and/or trails (or sections of roads and trails) could be improved, upgraded, or re-routed, these changes would be site specific and the condition of most roads would remain essentially the same.

Moderate: Impacts on travel and access would be evident in many portions of the planning area due to the overall miles of routes designated as open, limited in use, or completely closed. Changes in road and/or trail conditions would be noticeable in certain portions of the planning area due to improvements, upgrades, or re-routes.

Major: Impacts on travel and access would be extensive throughout the planning area due to the overall miles of routes designated as open, limited in use, or completely closed. Substantial numbers/miles of roads and/or trails would be improved, upgraded, or re-routed, resulting in a noticeable change in network condition throughout the planning area.

4.13.13.1 Common to All Management Areas

Under all alternatives, the Ukiah Field Office intends to improve access by acquiring legal public or administrative access over non-Federal lands from willing sellers as the need or opportunity arises. Alternative A allows for the use of eminent domain for such acquisitions, while Alternatives B, C, and D do not. Alternative A emphasizes efforts to acquire access to a broader range of lands and for a broader range of purposes than does Alternative B, which focuses acquisition efforts on routes designated "open" in the travel plan that currently lack public access and on access to lands identified for permanent retention. Alternative A includes routes designated "open" and access to lands identified for permanent retention, but adds areas with important resource values, larger blocks of public land, areas with substantial BLM improvements, and areas with high public demand for access.

Increasing public access, particularly to areas that are already experiencing a high public demand for access, has the potential to increase traffic and therefore conflicts and negative experiences. These impacts have the potential to be moderate to major in certain areas over the long-term, depending upon the type of accesses acquired (public or administrative) and the areas opened to use. Given the emphasis in all alternatives on purchasing from willing sellers, however, and the restrictions on which types of accesses will be sought, the impacts are more likely to be negligible to minor in the short-term, and may remain so in the long-term.

4.13.13.2 Cow Mountain

Alternative A proposes continuing current management practices with no appreciable changes. Alternative B decreases visitor opportunity by removing and rehabilitating 10 miles of roads and trails. As South Cow Mountain has approximately 120 miles of roads and trails, this represents a 7 percent reduction. This would concentrate use on the remaining designated routes, and visitors, commercial users, and private property owners would encounter increased traffic, possibly resulting in increased conflicts and more negative experiences. These effects would be minor to moderate in the short-term, depending upon the popularity of the trails closed, but could become moderate as recreation demand increased over the life of the plan. Alternatives C (Preferred Alternative) and D remove and rehabilitate fewer miles of roads and trails and develop more miles of new trails respectively. Both allow vehicle use during the general deer season. Alternative C allows for a net gain of 3-8 miles of routes (2.5 percent - 7 percent), Alternative D a net gain of up to 20 miles (16 percent). While initially these extra miles would allow for less crowding on already existing routes as the current numbers of visitors were spread over a larger network, the increase has the potential to attract new users and to entice current visitors to visit more often as a wider variety of recreational experiences becomes available. This, coupled with the expected increase in demand for recreational trails, could result in moderate impacts to visitors' experience of traffic congestion over the long-term.

4.13.13.3 Knoxville

Alternative A proposes continuing current management practices with no appreciable changes. Alternative B decreases visitor opportunity by removing and rehabilitating 12 miles of roads and trails. Knoxville has approximately 38 miles of routes; removing 31 percent of this would result in major impacts. Use would be concentrated on the remaining designated routes, and visitors, commercial users, and private property owners would encounter increased traffic, possibly resulting in increased conflicts and more negative experiences. These effects might be moderate in the short-term, depending upon the popularity of the trails closed, but could become major as recreation demand increases over the life of the plan. Alternative C (Preferred Alternative) removes and rehabilitates half the mileage of B (6 miles, or 15.5 percent), while D removes and rehabilitates nothing. Both C and D result in construction of 5-10 miles of new trails, a 13 to 26 percent expansion. Alternative C allows for a net change of between –1 to + 4 miles of routes, Alternative D a net gain of up to 10 miles or more. While initially extra miles would allow for less crowding on already existing routes as the current numbers of visitors were spread over a larger network, the increase has the potential to attract new users and to entice current visitors to visit more often as a wider variety of experiences became available. This, coupled with the expected increase in demand for recreational trails, could result in moderate to major impacts to increased use and congestion over the long-term, resulting in a decreases in transportation efficiency and a degradation in the experience of all users, including recreationists, private property owners, and commercial interests.

4.13.13.4 Indian Valley

All Alternatives recommend development of a trail network and travel management plan for the area. The current route network of approximately 75 miles was developed informally for mining, ranching, and hunting, and has not been formally maintained. There is no developed trail system, and the existing roads and trails tend to be steep and/or rutted. Depending upon the results and implementation of the plan, impacts would be minor to major. The level of impact would depend on the number and types of routes closed or subjected to travel restrictions and the mileage of roads and trails added, if any.

4.13.13.5 Cache Creek

All Alternatives recommend street legal vehicles to continue to be allowed on certain roads, and for the formulation of a trails plan. As this is essentially a continuation of the status quo, impacts will be negligible to minor.

4.13.13.6 Cedar Roughs

There is currently no legal public vehicular access to the area. An abandoned jeep trail allows administrative vehicular access, but there are no developed trails and all public use is non-motorized. Alternative A (Preferred Alternative) proposes no changes, unless a new public access is acquired, in which case a non-motorized trail would be provided. Alternatives B and C would close the jeep trail to all uses while providing no other access. As B and C would affect administrative use only, their effects would be negligible to the public, and minor to staff. Alternative D would result in improved access for the public and the development of both motorized and non-motorized trails and routes of travel. The impacts of D would be moderate to major, depending on the number and extent of routes added and their allowed uses.

4.13.13.7 Berryessa

The public has no legal access to this area; the BLM holds an easement that allows for administrative access only. Existing roads serve as access to radio communications equipment and firebreaks. Alternative A (Preferred Alternative) maintains the existing condition, while Alternative B would eliminate and rehabilitate all existing roads except the one to the radio tower. The impacts of either would be negligible to the public, but could affect the operator of the radio tower. Alternative C allows for the acquisition of a legal public access and would open designated routes to public travel, resulting in minor to moderate impacts, depending on the number of routes opened and their proximity to sensitive resources, the level of public interest and recreational demand. Alternative D expands on Alternative C by acquiring a public access, allowing public use of all existing routes of travel, and expanding the existing route network. The impacts of D would be moderate to major, depending on the amount of route expansion, travel restrictions imposed, the proximity of the routes to sensitive resources, the amount of public interest and the projected increase in general demand for recreational opportunities.

4.13.13.8 Stornetta

Currently there is no public vehicular access to the interior of the property. Alternative A would continue to allow vehicular access for administrative purposes only, thus the impact of this alternative would be negligible. Alternative B would remove and rehabilitate the existing roads in the interior of the area. As the impact would affect administrative uses only, effects would be minor. Alternative C (Preferred Alternative) would also limit vehicular use to administrative purposes, but would allow non-motorized and mechanized use consistent with the California Coastal trail, also producing a minor impact. Alternative D is the only alternative that opens the existing roads to public vehicular access and proposes creating additional accesses and a developed trail network. Depending on the number of accesses and the density of the trails, travel restrictions applied, the proximity of the routes to sensitive resources and the level of public interest, Alternative D would result in moderate to major impacts.

4.13.13.9 Geysers

Alternatives A and B allow administrative use of the road system year-round and vehicular use by the public only during general deer hunting season. As this is a continuation of the current situation the impact would be negligible. Alternatives C (Preferred Alternative) and D would allow public access year round on existing roads. In addition, Alternative D would allow the development of additional accesses and trails. The impact of both C and D would be minor to moderate, depending on the mileage of the route network, whatever travel restrictions were applied, the proximity of routes to sensitive resources, the amount of public interest and the extent of access and trail development.

4.13.13.10 Scattered Tracts

As many, if not most, of these lands have no public access, Alternative A, which calls for no new public access points and rehabilitation or development on a case-by-case basis, would have negligible impact. Alternative B, which calls for removal and rehabilitation of existing routes and firebreaks, would have a minor impact on administrative uses. Alternatives C (Preferred Alternative) and D, which allow the acquisition and development of public accesses and, in D, the expansion of trail networks, would have impacts ranging from minor to major, depending on the extent of development, the amount of public interest and recreational opportunities offered by any given tract of land.

4.13.14 Impacts on Travel Management and Route Designation from Recreation Resources

Management goals and decisions regarding Recreational Resources have the potential to dramatically impact travel management and route designation throughout the planning area. Short or long-term changes in the travel network may be implemented to protect sensitive resources from, enhance the quality of the visitors' experiences, provide for visitor safety, and to prevent problems for permittees and private property owners caused by recreationists. The miles and layouts of the networks may change as some routes are designated closed. Other roads and trails may have limits imposed that affect the hours, days, or seasons of use.

Types of use may change, as when, for example, motorized traffic is excluded where previously allowed or mechanized traffic is allowed where previously excluded. Some areas that have previously had little or no public access may become popular when new accesses are acquired and new routes developed. Some changes may subsequently affect other uses, even when it is not management's intention to do so. Some equestrians will avoid some trails open to mountain bikes, for example, even though equestrian use is still allowed. Hiking use tends to increase on the trails of South Cow Mountain when seasonal rain closures exclude OHV use there.

Fees have an effect on use of the travel network, as some visitors will avoid fee areas and self redirect to places where they are not charged. Installation of informational and directional signs can change use patterns in an area, i.e., some visitors will feel more comfortable using these routes once the fear of becoming lost is removed.

The impacts of these types of changes will range from short-term, localized, and negligible to long-term, general, and major, depending on the extent of the travel network affected, the nature of the allowed use, the desirability of the recreation experiences available, and the potential for increases in recreational demand over time.

Various management goals common to all management areas should have a beneficial effect on public use of the travel network in the planning area. Numbering, naming, and posting all trails, for example, as well as providing timely maintenance for all roads, trails, signs, and facilities, will facilitate public use and enjoyment, and may impact the travel network by increasing the use, thus increasing traffic. This impact will be difficult to measure directly and will probably be minor overall. Localized impacts may be more significant. For example, if a road or trail is overgrown from lack of maintenance, use tends to decline. A significant increase in travel on the route may occur once routine maintenance puts it back into useable condition.

A change in the level of enforcement of rules and regulations has the potential to change patterns of use of the travel network, as certain segments of the public will avoid areas where the law enforcement presence is high and may be attracted to areas they perceive as being less "controlled." Other segments of the public tend to take their place or move out in response to the same sets of circumstances, however, so the impact of these actions tends to be minor in regard to the route network. Proactive partnership with private groups and volunteers can affect the use of various roads, trails, and areas. Adopt-a-trail programs, for example, which result in improved trail maintenance, or the construction of new facilities, such as the Safety Training Course on Red Mountain, may increase use of certain routes as word of the improvements spreads and people are attracted to them. Barriers constructed to keep recreationists from trespassing on private lands redirect them back onto public roads and trails. The impacts of these changes tend to be localized and minor.

4.13.14.1 Common to All Management Areas

Please refer to the following Table 4-3 for a basic comparison of four of the factors that could affect travel management and route designation in *all* of the management areas, and how they are handled in the different Recreational Opportunity Spectrum Zones in each of the Alternatives. The four factors are: Allowed Uses (Motorized, Non-Motorized, and Mechanized), Collection of Fees, the level of Facility Development, and whether or not New Trails are to be added to the existing system (or the existing trail system maintained as is).

Changes in the types of Allowable Uses (Motorized, Non-Motorized, or Mechanized) could have major long-term impacts, depending on the extent of the travel network involved, the desirability of the network for specific types of use, the number of visitors newly allowed uses would attract and, if current uses are excluded, the number of previous users who would then have to go elsewhere. Collection of Fees—even in areas where fees have not been collected before--should not produce a significant impact, so long as the fees charged are reasonable. Facility Development has the potential for major impacts on the travel network. New campgrounds, picnic areas, staging areas, obstacle courses, interpretive kiosks, and restrooms are attractive to the public and will tend to concentrate use in areas where they are constructed. The change in level of use for a campground or picnic area is generally proportional to the size and extent of the facility, although some developments may be underutilized. Conversely, removal of existing facilities may or may not have an impact on local travel, depending on previous levels of use. Removal of unpopular developments that have fallen into disrepair should produce only a minor impact. If popular destination facilities are removed or relocated (to protect sensitive resources, for example) the impact may be major. Use of roads and trails may decline in that area but increase in others as its devotees seek other venues. None of the alternatives advocate major changes in the current level of facility development for the Common to All Management Areas section, therefore the impacts of these

changes should be minor also. In the most general terms, the Alternatives do not identify major changes in the existing Trail systems, therefore the impacts of changes in trails should be minor.

Other factors listed in the alternatives were not charted in Table 4-3, but are shown in the Alternatives Table: Signage and Monitoring, Special Use Permits, and Special Uses. The impacts of signage and monitoring are expected to be minor. All users benefit from the installation of signs, which can improve safety, protect resources, and keep people from getting lost, but the influence of the signs alone are difficult to measure and their impact is generally minor. Special Use Permits have the potential to have minor, moderate, or major short-term, localized impacts, depending on the size and nature of the event. Large special events such a motorized cross-country race, for example, may require closure of an area to other visitors. Visitors warned in advance may just stay away, but others will be redirected to travel routes remaining open, thus causing temporary increases in traffic on other routes. Also, the fact that they are unable to access the (temporarily) closed areas will be perceived as a user conflict. Emerging new Special Uses, such as geocaching and paragliding, will have impacts on the travel network in areas suitable for those activities that will be proportional to the numbers of people engaging in them. New recreational uses may emerge which will have impacts unanticipated at this time.

4.13.14.2 Cow Mountain

North Cow Mountain

Alternative A, with no changes, would produce no significant impact. Alternative B proposes the removal of some primitive campsites, the closure of firebreaks and some roads, and the closure of the (currently not maintained) last few miles of Mendo-Rock Road. The impacts of these changes should be minor to moderate, depending on the level of use of the campsites and these roads. Some campers and traffic will be redirected to other areas and routes, resulting in increased traffic congestion and user conflicts and negative experiences. Alternative C (Preferred Alternative) calls for construction of new facilities, such as a new shooting range and new trailheads, and the re-development of an old campground. The impacts of these developments could be moderate to major, depending on how many new visitors were attracted, and how much more frequently current visitors would travel to the area to enjoy the new recreational opportunities. Alternative C also adds maintaining sections of a road and trail that previously were not cared for. This should increase use on these routes and have a minor to moderate impact. Alternative D proposes even more extensive development, including more accesses, a full service campground, and new trails. All of these, particularly a developed campground, have the potential for moderate to major impacts on use of the roads and trails, depending on the number of visitors attracted.

South Cow Mountain

Alternatives A and B, with no major changes, should produce no significant impacts. Alternative C (Preferred Alternative) proposes the expansion of the existing campgrounds at Buckhorn and Red Mountain, building day use facilities at the Safety Training Course (Red Mountain) and redevelopment of the Westside staging area. The impacts of these improvements could be minor to moderate, depending on the extent of the developments and the number of new visitors attracted to them. Alternative C also calls for the closure of 3 miles of routes (2.5 percent of the total system of 120 miles). This could have a minor to moderate impact depending on the level of use these routes currently receive and their importance in the connectivity of the trail system. Alternate D would also expand some camping

facilities and change the travel network by opening up overgrown trails and redeveloping and re-routing other trails. The impacts of these actions would be minor to major, depending on the numbers of visitors attracted by the new facilities and altered trails.

Table 4-3: Impacts to Travel Management and Route Designation from Recreation Resources – Common to All Management Areas

ALTERNATIVE A	NON-MOTORIZED	MECHANIZED	MOTORIZED	FEES	FACILITY DEVMT.	NEW TRAILS
Primitive Zone	Yes	No	No	No	No	No new
Backcountry Zone	Yes	Yes	No	No	Minimal	Maintain existing
Middlecountry Zone	Yes	Yes	No	No	Basic	New OK
Frontcountry Zone	Yes	Yes	Yes	No	Basic	(Not clear)
Rural Zone	Yes	Yes	Yes	No	Yes	
Urban Zone	Yes	Yes		All Uses	Yes	
ALTERNATIVE B						
Primitive Zone	Yes	No	No	No	No	
Backcountry Zone	Yes	No	No	No		
Middlecountry Zone	Yes	No	No	No	No	No
Frontcountry Zone	Yes	No	No	No	No	No
Rural Zone	Yes	Yes	Yes	Some areas	No	No
Urban Zone	Yes	Yes	Yes	Some areas		
ALTERNATIVE C						
Primitive Zone	Yes	No	No	No		
Backcountry Zone	Yes	Yes	No	Overnight Use only	Minimal	*
Middlecountry Zone	Yes	Yes	Yes	Overnight Use only	Minimal	*
Frontcountry Zone	Yes	Yes	Yes	Overnight Use only	Minimal	*
Rural Zone	Yes	Yes	No	Overnight Use only	Minimal	*
Urban Zone	Yes	Yes	No	Overnight Use only		
ALTERNATIVE D						
Primitive Zone	Yes	No	No	No	No	
Backcountry Zone	Yes	Yes	No	For Day & Overnight	Minimal.	*
Middlecountry Zone	Yes	Yes	Yes	For Day & Overnight	*	*
Frontcountry Zone	Yes	Yes	Yes	For Day & Overnight	Minimal	*
Rural Zone	Yes	Yes	No	Day & Overnight	*	*
Urban Zone	N/A	N/A	N/A	N/A		

* Consistent with Mgmt. prescriptions

4.13.14.3 Knoxville

Alternative A (Preferred Alternative) proposes no significant changes to current management practice, and has no significant impacts. Alternative B follows the Common to All Management Areas recommendations for allowable uses in the various zones (see Section 4.13.14.1 for discussion of impacts), but also proposes to close some existing routes. The impact of these closures would be minor to major, depending on the extent and popularity of the trails affected, and their place in the connectivity of the system. Alternative C focuses on improvements to the trail network, changing the character of some trails from "out-and-back" to loop trails. It also calls for closing some trails. The impacts of these changes would be moderate to major, depending on the miles of trails affected and their popularity with the users. Opening new trails tends to reduce traffic on any given part of the system; closing trails tends to increase traffic and potential conflicts elsewhere. Although some campers prefer dead-end trails for the privacy they offer, people out for the day tend to prefer loop trails, so the net impact of these actions could be positive, even if some routes were closed. If Special Use permits for motorized use are granted, there would be short-term, localized impacts. The extent of the impacts would depend on the size of the special events and the restrictions placed on non-event visitors. Alternative D is similar to Alternative C, but includes development of non-motorized trails on the west side, which has the potential to attract new users.

4.13.14.4 Indian Valley

Alternative A proposes no significant changes to current management practice, and has no significant impacts. Alternative B follows the Common to All Management Areas recommendations for allowable uses in the various zones (see Section 4.13.14.1 for discussion of impacts), but also proposes to close some existing routes and develop new trails on the east side. The impacts of these changes would be moderate to major, depending on the miles of trails affected and their popularity with the users. Opening new trails tends to reduce traffic on any given part of the system; closing trails tends to increase traffic and potential conflicts elsewhere. Alternative C (Preferred Alternative) calls for adding more basic trailhead facilities and designing and constructing a trail network, which would include some re-routes of existing trails. These actions could have a major impact on the existing route network, depending on the extent of the changes and the consequent alteration of visitor use levels and patterns. Alternative D adds to C by proposing more development, i.e., more developed trailhead and camping facilities. This should also have a major impact on use of the travel network.

4.13.14.5 Cache Creek

Alternative A proposes no significant changes to current management practice, and has no significant impacts. Alternative B generally follows the Common to All Management Areas Alternative B recommendations for allowable uses in the various zones (see Section 4.13.14.1 for discussion of impacts). Alternative C (Preferred Alternative) calls for the development of some new loop trails and new trailheads, an equestrian camp, and some primitive camping facilities at Fiske Lake. Impacts of these facilities could be moderate to major, as they would change the patterns of travel on the route network and attract new users. The Urban Zone would receive development for handicapped access; this would have a minor impact on visitor use of the travel network. Alternative D would add a more development in the Rural and Urban Zones, and accept permit applications for motorized Special Events. The former would attract more visitors, but their impact on the travel network would depend on how many accessed

the other zones. Motorized Special Events could have minor to major impacts, depending on the time of year, size and nature of the event, and restrictions placed upon other visitors.

4.13.14.6 Cedar Roughs

Alternative A proposes no significant changes to current management practice, and has no significant impacts. Alternatives B and C (Preferred Alternative) follow the Common to All Management Areas Alternative B recommendations for allowable uses in the various zones (see Section 4.13.14.1 for discussion of impacts), except that C adds staging areas, parking and trailhead facilities, and new access corridors. The impacts of these developments would be moderate to major depending on their extent and the numbers of visitors they attracted. Alternative D adds full service parking facilities with camping, trash pickup, and restrooms. This could have major impacts, depending on the same factors given above.

4.13.14.7 Berryessa

Alternative A (Preferred Alternative) proposes no significant changes to current management practice, and has no significant impacts. Alternative B follows the Common to All Management Areas Alternative B recommendations for allowable uses in the various zones (see Section 4.13.14.1 for discussion of impacts), but does not recommend anything specific. Alternatives C and D propose location of a new trailhead on non-BLM property, and a trail connection to Cache Creek. Implementation of this proposal will be dependent upon gaining a public easement to the non-BLM property. No motorized use would be allowed. As there is currently no legal public access to Berryessa, development of an access that would allow public entrance onto the road system would have a major impact on the level of use.

4.13.14.8 Stornetta

Alternative A proposes no significant changes to current management practice, and has no significant impacts. Alternative B follows the Common to All Management Areas Alternative B recommendations (see Section 4.13.14.1 for discussion of impacts) for allowable uses in the various zones, but adds the development of trails in the Middlecountry, which would have a moderate to major impact on public use of the route system depending on the extent of the added trails and the level of public interest. Alternatives C (Preferred Alternative) and D add some coastal trail development, some minor facilities such as bridges and benches, and some parking along Highway 1. Given the high demand for coastal access everywhere in California, these developments have the potential to create a major impact.

4.13.14.9 Geysers

Alternative A proposes no significant changes to current management practice, and has no significant impacts. Alternative B follows the Common to All Management Areas Alternative B recommendations (see Section 4.13.14.1 for discussion of impacts) for allowable uses in the various zones. Alternative C (Preferred Alternative) adds some access and basic trailhead facilities and trails to connect fragmented lands. As public use of this property is currently very limited, these additions have the potential to create moderate impacts. Alternative D proposes a higher level of development for the trailhead facilities. This also has the potential for moderate to major impacts, depending on how much use is allowed and the level of public interest.

4.13.14.10 Scattered Tracts

Alternative A proposes no significant changes to current management practice, and has no significant impacts. Alternative B follows the Common to All Management Areas Alternative B recommendations (see Section 4.13.14.1 for discussion of impacts) for allowable uses in the various zones. Alternative C (Preferred Alternative) adds some accesses and basic trailhead facilities, and some trails across non-BLM property, which would require an easement. Alternative D adds a developed campground at Black Forest. These developments have the potential to create moderate to major impacts, depending on current levels of use at the various tracts, and the level of public interest. A developed campground at Black Forest would have a major impact.

4.13.15 Impacts on Travel Management and Route Designation from Soil Resources

Modern construction techniques designed to minimize disruption of natural drainage patterns, erosion and sedimentation will be applied to all new road and trail construction, and reroutes and maintenance of existing trails. Use of these techniques on new routes will have negligible impact. The reroute of some sections of old roads and trails may have long-term localized impacts that could be moderate to major, however, as the re-route will have the potential to change the level and nature of the use. Some OHV enthusiasts, for example, relish the challenge of particularly steep routes and may abandon use of sections that are re-routed. These users may be replaced on these roads and trails by those seeking a less challenging experience, however. Short sections of re-route should have minor localized impacts. Longer re-routes may produce moderate to major long-term impacts, depending on the level of use the route receives and how drastic the change. The posting of signs notifying the public of the presence of NOA may have minor to moderate impacts on the levels of use in these areas, as some people will avoid the area to avoid the exposure.

4.13.15.1 Common to All Management Areas

No impacts were identified that were common to all management areas.

4.13.15.2 Cow Mountain

Alternatives A and B propose construction of new roads and re-routes as identified. Construction of new roads has the potential to impact use in a number of ways. Increasing the road network may spread visitors out over a larger area, thus decreasing traffic, conflicts, and negative experiences. Additionally, the effect of spreading motorized use over a larger route network may have the net effect of reducing the rutting of routes due to overuse. On the other hand, new visitors may be attracted by the new routes and regular visitors may decide to come more often as the variety of recreational opportunities increases, thus maintaining or increasing traffic levels. Impacts should be minor to moderate in the short-term.

Alternative C (Preferred Alternative) proposes that all roads and trails be prioritized for mitigation-based analysis of sediment production, and that redesign projects be scheduled on a priority basis to be determined by the results. There could be short-term localized moderate impacts of these projects while they are under construction, as that section of the route might have to be closed and traffic redirected. The long-term effects of the finished projects would be negligible to minor, depending on the extent of the area affected and the nature of the change. Alternative C also calls for scientific studies to be used as

a basis for the South Cow Mountain Rain Closure Policy. If the studies result in changes to the current policy, the long-term impact to overall use of South Cow could be minor to moderate, although seasonal.

Alternative D states that all roads and trails will be rerouted to avoid suspended sediment discharge into streams, or that water crossings will be constructed that prevent direct vehicular contact with the water. While some visitors seem to particularly enjoy driving their vehicles through streams and may miss this experience, the impact of creating new stream crossings should have a minor effect on the travel network. Alternative D goes on to recommend the decommissioning of a portion of Mendo-Lake Road, but would provide a new road to replace it. Alternative D also makes specific recommendations for the use of certain erosion control construction techniques for roads and trails. The impacts of both should be localized and minor.

4.13.15.3 Knoxville

Alternatives A and B recommend no new route construction, and no rerouting, therefore no impact is anticipated. Alternative C (Preferred Alternative) calls for the evaluation of existing routes for sediment production and drainage patterns, and development of a prioritized list of repair projects designed to minimize soil loss based upon the analysis. There could be short-term localized moderate impacts of these projects while they are under construction, as that section of the route might have to be closed and traffic rerouted, putting an increased traffic load on other routes. The long-term effects of the finished projects would be negligible to minor, depending on the extent of the area affected and the nature of the change. Alternative D states that all roads and trails will be rerouted to avoid suspended sediment discharge into streams, or that water crossings will be constructed that prevent direct vehicular contact with the water. While some visitors seem to particularly enjoy driving their vehicles through streams, and may miss this experience, the impact of creating new stream crossings should have a minor effect on the travel network.

4.13.15.4 Indian Valley

Soil Resources Alternatives A and B would not result in significant impacts, as they propose no new construction of routes. Alternative C (Preferred Alternative) states that an inventory of sediment production will be done for all roads and trails, and mitigation measures will be taken to address those that fall outside the acceptable parameters. Alternative C goes on to say that when the inventory is complete and routes have been designated, all undesignated routes will be closed and rehabilitated. The impacts of these closures would be long-term and minor to moderate, depending on the length, connectivity, and use of the routes eliminated. Major impacts would be avoided by leaving the basic skeleton of the travel network intact, and closing only parallel, redundant or superfluous routes. Alternative D calls for closing all roads and trails in the vicinity of mine sites. The impacts of Alternative D would be minor to moderate, depending on the number of mine sites, how vicinity is defined, and the usage level of the routes closed.

4.13.15.5 Cache Creek

No significant impacts would result from Alternatives A and B, as they propose no changes in the current management of the area. Alternative C (Preferred Alternative) calls for the evaluation of all roads and trails, and the closure of those that do not meet the study parameters. Alternative D is similar, but proposes that the roads closed under Alternative C be decommissioned and rehabilitated. The direct

impacts of C and D would be minor to moderate, depending on the miles of routes closed, their usage level and the importance of individual routes to the overall connectivity of the travel system. Indirect impacts would also occur as other routes were used to replace those eliminated.

4.13.15.6 Cedar Roughs

No significant impacts would result from Alternatives A, B and D, as they propose no changes in the current management of the area. Alternative C (Preferred Alternative) calls for appraisal of the 14 miles of jeep roads in the area, and closure or reroute of those which are resulting in sedimentation which is affecting local fisheries. As there is currently no public vehicular access to the property, and none is proposed, the impacts of these changes would be negligible to minor, depending on the level of administrative use the affected routes receive.

4.13.15.7 Berryessa

No significant impacts would result from any of the Alternatives (Alternative C is the Preferred Alternative), as they propose no changes in the current management of the area.

4.13.15.8 Stornetta

No significant impacts would result from Alternatives A and B, as they propose no changes in the current management of the area. Alternative C (Preferred Alternative) calls for monitoring equestrian use, and Alternative D proposes to eliminate this use in riparian areas. Alternative D would have minor to moderate long-term impacts, depending on the level of equestrian use and how it is redirected.

4.13.15.9 Geysers

Alternatives A and B propose that no additional roads or trails be constructed or rerouted, while Alternatives C (Preferred Alternative) and D continue present management practices regarding the travel network. The selection of Alternatives A or B is likely to have a minor or moderate effect on travel management in that without the option of adding additional routes to meet increasing demand, increased congestion, visitor conflicts and sensitive resource impacts (including soils) are more likely to occur. travel management and route designation Alternative D calls for the development of new accesses and trails, which would be incompatible with Alternatives and B, should any combination of these be chosen in the preferred alternative.

4.13.15.10 Scattered Tracts

No significant impacts would result from Alternatives A, B and D, as they propose no changes in the current management of the area. Alternative C (Preferred Alternative) calls for an assessment of all pre-existing roads and trails in the new Black Forest acquisition. The assessment data would then be used to make decisions regarding possible future route decommissioning and/or rehabilitation. The impacts of these future projects should be minor to moderate, depending on the extent of closures, their level of previous use, and their importance to the connectivity of the travel system.

4.13.16 Impacts on Travel Management and Route Designation from Water Resources

Management goals for both Water and Soil Resources include minimizing the amount of sediment entering the waterways of the planning area. Therefore, many of the policies, actions, and projects that would address this goal have been covered under Section 4.13.15 (Soil Resources). Alternative C is the Preferred Alternative for water resources decisions throughout the planning area.

4.13.16.1 Common to All Management Areas

Under Alternative A, field monitoring of all roads, trails, and other facilities would be conducted, and emerging concerns would be reported to the Ukiah Field Office watershed specialist. This could potentially result in projects that would affect the travel network. (See 4.13.15 for a more detailed discussion of the impacts of such projects.) No significant impacts were identified from the other Alternatives.

4.13.16.2 Cow Mountain

Alternative B proposes the removal of water bars and rolling dips from all roads and trails. Such projects would result in minor, localized, temporary impacts as some sections of routes would have to be closed and traffic rerouted as the work was being carried out. As the changes could affect the character of some reaches of roads and trails, there might be long-term minor impacts to their levels of use. Some visitors might like the changes and some might not, and some might alter their recreational travel patterns as a result. No significant impacts were identified from the other Alternatives.

4.13.16.3 Indian Valley

Alternative B proposes the removal of water bars and rolling dips from all roads and trails. Such projects would result in minor, localized, temporary impacts as some sections of routes would have to be closed and traffic rerouted as the work was being carried out. As the changes could affect the character of some reaches of roads and trails, there might be long-term minor impacts to their levels of use. Some visitors might like the changes and some might not, and some might alter their recreational travel patterns as a result. No significant impacts were identified from the other alternatives.

4.13.17 Potential Cumulative Impacts to Travel Management and Route Designation

No one can set foot, hoof, or wheel on any acre of BLM land without using an established road or trail, or contributing to the establishment of one (perhaps illegally). All uses, from commercial ranching and mining to recreation to administrative actions outside the office, are dependent on the travel network of roads and trails.

The population of the State of California was estimated to be 33,871,648 in the year 2000, having grown 13.6 percent since 1990. By the year 2003, the estimate had grown another 4.8 percent, to 35,484,453[1]. Much of the area surrounding the Ukiah Field Office has been growing even faster than the state average.

[1] All population figures are from the U.S. Census Bureau website, www.census.gov

Table 4-4: Ukiah Field Office Population Data

COUNTY	POPULATION 2000	% POPULATION INCREASE FROM 1990	POPULATION 2003	% POPULATION INCREASE FROM 2000
Mendocino	86,265	7.4%	88,358	2.4%
Sonoma	458,614	18.1%	466,725	1.8%
Lake	58,309	15.2%	63,369	8.7%
Napa	124,279	12.2%	131,607	5.9%
Colusa	18,804	15.5%	19,678	4.6%
Yolo	168,660	19.4%	183,042	8.5%

The population of the State of California in general, and of Northern California in particular, has traditionally been very outdoor recreation oriented. The weather in this part of the state is conducive to such activities year round, and demand for recreation opportunities has boomed with the population. The post-war generation, which grew up in conjunction with an emphasis on the outdoor experience and fitness and innovative gear to accomplish both comfortably, has pursued happiness on public lands. This generation, which started out hiking and camping in Volkswagen vans, now has the retirement time, money, and desire to stay close to nature. They are major supporters of the Recreational Vehicle industry, buying motorhomes, ATVs, horse trailers, etc. in large numbers. These are the people joining BLM's permittees and staff for space on the travel network.

At the same time, their ability to access both private and public lands is becoming more restricted. Many private tracts once open are now fenced and gated to prevent trespass., As more and more development erases wildlife and plant habitat, and public lands become important refuges and recovery areas for sensitive species, recreationists also experience more seasonal and permanent closures and other restrictions on their travel. Greater numbers of people are squeezed into smaller networks of roads and trails, and traffic that is excluded from one area crowds onto another.

Given these conditions, the cumulative effects on travel management and route designation of any restrictions on continued use of public lands, without mitigation, is likely to have significant impacts both immediately and well into the future. These impacts will affect both the public lands in question and the private lands nearby, as well as lands under the jurisdiction of other agencies, such as the USFS. Specifically, one has to assume that without forethought, proper planning and management, trespass, route proliferation, habitat degradation, habitat fragmentation, and user conflicts will escalate. These problems will involve all recreational groups: OHV users; sportsmen; rock climbers; hikers; mountain bikers; equestrians; and devotees of sports not yet imagined.

The level of the cumulative effects and the significance of the impacts will be determined by the Alternative selected and the prescriptions related to Travel Management that are in it. As mentioned throughout this section, the actual degree of impact will be highly dependent on the exact nature of the restrictions or management prescriptions, e.g., the number of routes and miles restricted, the current use level and future demands. For example, closure of a steep, technical motorcycle trail may have great impact in the short-term while the impact of the closure of a long touring dual-track route may produce less noticeable effects which last over a much longer span of time, depending on shifts in the sport and the numbers of people interested in these different riding experiences.

Demand for the use of these travel networks will continue to grow and present management challenges for the foreseeable future.

Table 4-5: Impacts on Travel Management and Route Designation Summary

MGMT AREA	ACEC	WSA	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C, SAME AS B, EXCEPT	ALTERNATIVE D, SAME AS C, EXCEPT
Cow Mtn.			No change			
Knoxville			No change	Create new ACEC, 1,756 acres (1)	Expand ACEC to 5,236 acres (1)	Expand ACEC to 24,346 acres (7)
Indian Valley, Brodiaea	40 acres		No change	Expand ACEC to100 acres	Expand ACEC to 100 acres	Expand ACEC to 100 acres
Indian Vall., Walker Ridge			No change		Create ACEC, 3,990 acres (4)	Increase ACEC to 8,784 acres (8)
Cache Creek	10,000 acres	33,382 acres	No change	Manage 1,848 more acres for wilderness characteristics	Manage 4,913 more acres for wilderness characteristics	Manage 18,262 more acres for wilderness characteristics
Cedar Roughs		5,597 acres	No change	Expand ACEC to 6,350 acres	Expand ACEC to 6,350 acres	Expand ACEC to 6,350 acres
Berryessa			No change			
Stornetta			No change	887 acres WSA (2)		
Geysers			No change			
Scattered Tracts, Black Forest			No change	Create Black Forest ACEC, 781 acres (3)	Create Black Forest ACEC, 781 acres (3)	Create Black Forest ACEC, 781 acres (3)
Scattered Tracts, Cedars of Sonoma Co.			No change		Create ACEC, 5,000 acres (5)	Create ACEC, 5,000 acres (5)
Scattered Tracts, Lost Valley Mea.			No change		Create ACEC, 40 acres (6)	Create ACEC, 40 acres (6)
Scattered Tracts, Blue Ridge			No change			Create ACEC, 13,640 acres (9)
Scattered Tracts, Quail Ridge			No change			Create ACEC, 558 acres (10)
No. Cal. Chaparral			No change			

1. Contains no OHV routes; no new OHV routes would be allowed.
2. Use of motorized and non-motorized vehicles prohibited.
3. No impact on travel management expected.
4. Currently contains 7 miles of hiking/equestrian trails. OHV use currently allowed, but very light.
5. No current public access, except by guided tour (hiking).
6. An OHV access route exists, but is currently closed.
7. Comprises entire Knoxville Area.
8. Includes 7 miles of hiking/equestrian trails mentioned in (4), plus 20 miles of existing roads lightly used by OHVs. OHV routes would be converted to non-motorized use.
9. Area contains 9.5 miles of the Blue Ridge Trail, open to hiking, equestrian, and mountain bike use. The trail and these uses would not be affected by the proposal.

10. No current or projected public access.

4.14 IMPACTS ON RECREATION RESOURCES

4.14.1 Impacts on Recreation Resources from Visual Resources Management

VRM classes were developed as part of this RMP and in coordination with the BLM's Recreation Opportunity Spectrum (ROS). The proposed VRM classes allow progressively greater modification of the landscape's existing character within all management areas as the ROS classification progresses from the least developed settings (primitive and backcountry zones) through to the most developed settings (rural and urban zones). The less restrictive VRM classifications are in step with proposed ROS classifications that permit greater levels of recreation development, a wider range of recreation activities, and other management actions. This coordination between VRM and ROS classification should minimize the impact of visual resource management on recreation in that the restriction imposed will be in keeping with the desired setting as expressed by the ROS classification. In general, visual resource management will have a long-term beneficial impact on recreation resources by providing the appropriate level of protection to the surrounding scenery and viewsheds, which are important components of the recreation setting.

VRM classification was not completed prior to the development of this RMP for most management areas, and Alternative A would continue this minimal implementation of visual resource management, with negligible impacts on recreation resources. Lack of a more formalized and consistently applied visual resource management may lead to less protection of visual resources, which would have adverse impacts on recreation resources, particularly in areas where development pressures are greatest.

Comparing the other alternatives, Alternative C proposes higher level VRM classification than Alternative B for several ROS classifications. These changes allow low rather than no or minimal levels of change in some backcountry zones and allow moderate or high rather than low levels of change to the existing landscape in some middlecountry and frontcountry zones. Alternative D proposes still less restrictive VRM classes that allow those changes to additional land areas. These less restrictive VRM classes may have moderate adverse impacts on recreation resources in that they would permit potentially more visually disruptive development and other landscape alteration to occur in some areas.

4.14.2 Impacts on Recreation Resources from Wildlife and Fish

Under all alternatives, policies to minimize or eliminate the need for additional species listings under the ESA and policies to contribute to the recovery of already listed species would continue and would not impact recreation. Policies regarding reintroductions and augmentation, predator and animal damage control, and monitoring of threatened and endangered species would continue and would not impact recreation. Impacts on recreation related to prescribed burning can be found in Section 4.14.10, Impacts on Recreation from Fire Management. Impacts on recreation related to grazing can be found in Section 4.14.9, Impacts on Recreation from Grazing.

4.14.2.1 Common to All Management Areas

Policies regarding migratory birds and species prioritization under Alternatives C and D would not impact recreation.

4.14.2.2 Cow Mountain

Alternative A would continue current levels of habitat protection and development as outlined in the *Cow Mountain MFP*. Comparatively, Alternative B could limit activities to protect priority habitats, Alternative C would increase habitat development actions to protect priority habitats, and Alternative D would have even more habitat development than Alternative C (Preferred Alternative). Continuation of current levels and quality of habitat and fish habitat as well as policies to evaluate all road maintenance in the Russian River drainage in Alternative A would not impact recreation. Actions in Alternative B to protect priority habitats such as limit inappropriate OHV use could impact recreation and would be dependent upon location, length of limitations, and affected uses. Limiting inappropriate use could have a long-term minor beneficial impact by encouraging and educating the public on appropriate recreational behavior. Actions to protect priority habitats under Alternatives C and D would not impact recreation unless recreational use or access would have to be temporarily suspended for habitat activities in which case short-term negative negligible impacts to recreation may occur. However, if game species benefit from habitat improvements then long-term beneficial impacts to recreation, primarily for hunters, could result if game populations increase and correspondingly hunter success rates increase. Long-term beneficial impacts on recreation could also occur if wildlife viewing success rates or opportunities increase. Magnitude of impacts on recreation in both instances (hunting and wildlife viewing) would depend on the amount of increase in success rates.

Management actions under Alternative B to protect migratory birds could result in vehicular access restrictions or signage. Restricting access could have a negative negligible to minor impact on recreation depending on location and time of year. Impacts would be greatest if high use areas at peak times were restricted. Signage could have a long-term negligible beneficial impact on recreation by encouraging appropriate behavior and educating the public about important wildlife resources.

Actions under Alternatives C and D to restore and enhance game fisheries habitat and expand game fish populations could have negligible to minor beneficial impacts to recreation depending on the increase in numbers of game fish and associated increase in angler catch rates.

Alternative A would continue the current level of additional habitat improvements that benefit big game species, whereas Alternative B would prioritize additional habitat developments that would provide short-term benefits for deer and Alternative C would include additional habitat developments for both game and non-game species in the entire management area. All three alternatives could have long-term beneficial impacts on recreation, primarily for hunters, if game populations increase and correspondingly hunter success rates increase. Long-term beneficial impacts on recreation could also occur if wildlife viewing success rates or opportunities increase. Magnitude of impacts on recreation in both instances (hunting and wildlife viewing) would depend on the amount of increase in success rates.

Species introduction and augmentation policies under Alternative B would not impact recreation, however these policies under Alternatives C and D would also allow relocation of wild turkeys to Cow

Mountain. This could have long-term beneficial impacts on recreation, primarily for turkey hunters and wildlife viewers, if viewing and hunting success rates increase due to increased number of game.

4.14.2.3 Knoxville

Alternative A would continue current levels of habitat protection and development as outlined in the *Clear Lake MFP*. Comparatively, Alternative B could limit activities to protect priority habitats, Alternative C (Preferred Alternative) would increase habitat development actions to protect priority habitats, and Alternative D would have even more habitat development than Alternative C. Continuation of current habitat protection, focus, and development as well as maintenance of existing populations levels in Alternative A would not impact recreation. Though passive management activities in Alternative B would let natural processes proceed without intervention in order to protect habitats, measures to prevent impacts to wildlife habitat could impact recreation depending on duration and extent of use limitations, closures, or other management actions. Impacts could be both long-term and/or short-term. Actions to protect priority habitats under Alternatives C and D would not impact recreation unless recreational use or access would have to be temporarily suspended for habitat activities in which case short-term negative negligible impacts to recreation may occur. However, if game species benefit from habitat improvements then long-term beneficial impacts to recreation, primarily for hunters, could result if game populations increase and correspondingly hunter success rates increase. Long-term beneficial impacts on recreation could also occur if wildlife viewing success rates or opportunities increase. Magnitude of impacts on recreation in both instances (hunting and wildlife viewing) would depend on the amount of increase in success rates.

Policies regarding energy development and migratory birds in all alternatives would not impact recreation. Preventative measures to eliminate impacts to migratory birds in Alternative B could impact recreation both in the long-term and/or short-term depending on duration and extent of use limitations, closures, or other management actions. Policies regarding introductions and augmentations in Alternatives B, C, and D would not impact recreation. Policies regarding reintroduction under Alternative D would not impact recreation.

Alternative B would prioritize additional habitat developments that would provide short-term benefits for deer whereas Alternative C would include additional habitat developments for both game and non-game species at priority locations. Both alternatives could have long-term beneficial impacts on recreation, primarily for hunters, if game populations increase and correspondingly hunter success rates increase. Long-term beneficial impacts on recreation could also occur if wildlife viewing success rates or opportunities increase. Magnitude of impacts on recreation in both instances (hunting and wildlife viewing) would depend on the amount of increase in success rates.

Alternatives A and B would not have any specific management actions for fisheries. Alternative C would include fisheries surveys and a policy to avoid impacts on fisheries from project work, neither of which would impact recreation. Alternative D would include fisheries habitat improvements which could have long-term beneficial impacts on recreation if game fish populations increase and corresponding angler catch rates increase.

4.14.2.4 Indian Valley

Alternative A would continue the current level of habitat protection, focus, and development as outlined in the *Clear Lake MFP* and would not impact recreation.

Continued monitoring of bald eagles in Alternatives A and B as well as management actions related to bald eagles in Alternative C (Preferred Alternative) would not impact recreation. However, management actions could impact recreation if nesting closures affect public access or use of recreation facilities. Impacts would be short-term and could range from negligible to minor depending on level of use of facilities or access affected by closures.

Though passive management activities in Alternative B would let natural processes proceed without intervention in order to protect habitats, measures to prevent impacts to wildlife habitat could impact recreation depending on duration and extent of use limitations, closures, or other management actions. Impacts could be both long-term and/or short-term. Actions to protect priority habitat and habitat development at priority locations under Alternatives C and D would not impact recreation unless recreational use or access would have to be temporarily suspended for habitat activities in which case short-term negative negligible impacts to recreation may occur. However, if game species benefit from habitat improvements then long-term beneficial impacts to recreation, primarily for hunters, could result if game populations increase and correspondingly hunter success rates increase. Long-term beneficial impacts on recreation could also occur if wildlife viewing success rates or opportunities increase. Magnitude of impacts on recreation in both instances (hunting and wildlife viewing) would depend on the amount of increase in success rates.

Preventative measures to eliminate impacts to migratory birds in Alternative B could impact recreation both in the long-term and/or short-term depending on duration and extent of use limitations, closures, or other management actions. Policies regarding species introductions in Alternatives B, C, and D, as well as augmentation policies in Alternatives C and D would not impact recreation.

Alternatives A and B would not have any specific management actions for fisheries. Alternative C would include fisheries surveys and a policy to avoid impacts on fisheries from project work, neither of which would impact recreation. Alternative D would include fisheries habitat improvements which could have long-term beneficial negligible impacts on recreation if game fish populations increase and corresponding angler catch rates increase.

Alternative B would prioritize additional habitat developments that would provide short-term benefits for deer whereas Alternative C would include additional habitat developments for both game and non-game species at priority locations. Both alternatives could have long-term beneficial impacts on recreation, primarily for hunters, if game populations increase and correspondingly hunter success rates increase. Long-term beneficial impacts on recreation could also occur if wildlife viewing success rates or opportunities increase. Magnitude of impacts on recreation in both instances (hunting and wildlife viewing) would depend on the amount of increase in success rates.

4.14.2.5 Cache Creek

All four alternatives would be the same for this management area (Alternative B is the Preferred Alternative). Continuation of current wildlife management guidelines and level of habitat development

found in the *Cache Creek CRMP* would not impact recreation. Policies related to energy development and effects on migratory birds as well as policies regarding protection of priority habitats would not impact recreation. There would be a seasonal closure for bald eagle nesting which would have a negative negligible short-term impact on recreation from restricted use. Additional brush piling for quail habitat could have a long-term negligible beneficial impact on recreation, primarily for quail hunters and wildlife viewers, if quail populations increase and correspondingly hunter and viewer success rates increase. Restoring and enhancing fisheries habitat and expanding game fish populations could have long-term beneficial impacts on recreation if numbers of game fish increase and corresponding angler catch rates increase. Elk herd and wild turkey augmentation could also have long-term beneficial impacts on recreation if game populations increase and correspondingly viewing and hunting success rates increase.

4.14.2.6 Cedar Roughs

Alternatives A, B, and C (Preferred Alternative) are the same for this management area and would continue the current level of habitat protection and development. Though passive management activities in these three alternatives would let natural processes proceed without intervention in order to protect habitats, measures to prevent impacts to wildlife habitat could impact recreation depending on duration and extent of use limitations, closures, or other management actions. Impacts could be both long-term and/or short-term. Alternative D would provide additional habitat development of riparian vegetation which could have a long-term beneficial negligible impact on recreation, primarily fishing, if numbers of game fish increase and correspondingly angler catch rates increase. The augmentation policy under Alternative D would not impact recreation.

4.14.2.7 Berryessa

Alternatives A, B and C (Preferred Alternative) are the same for this management area and would continue the current level of habitat protection and development as outlined in the *Clear Lake MFP*. Though passive management activities in these three alternatives would let natural processes proceed without intervention in order to protect habitats, measures to prevent impacts to wildlife habitat could impact recreation depending on duration and extent of use limitations, closures, or other management actions. Impacts could be both long-term and/or short-term. Alternative D would provide increased habitat development which would not impact recreation unless recreational use or access would have to be temporarily suspended for habitat activities in which case short-term negative negligible impacts on recreation may occur. However, if game species benefit from habitat improvements then long-term beneficial impacts to recreation, primarily for hunters, could result if game populations increase and correspondingly hunter success rates increase. Long-term beneficial impacts on recreation could also occur if wildlife viewing success rates or opportunities increase. Magnitude of impacts on recreation in both instances (hunting and wildlife viewing) would depend on the amount of increase in success rates. The augmentation policy under Alternative D would not impact recreation.

4.14.2.8 Stornetta

Alternative A would continue implementation of the *Stornetta Ranch IMP* which would not impact recreation. Alternative B would add more habitat improvements for the Western snowy plover, Alternative C (Preferred Alternative) would add even more habitat improvements for this species and others, and Alternative D would include habitat improvements for several species as well as to try to reintroduce endemic species.

Alternative A would also continue the implementation of the Draft Recovery Plans for Behren's silverspot butterfly and Point Arena mountain beaver which could have long-term beneficial negligible impacts on recreation through the outreach programs that would offer more information to visitors and local users that would enhance their recreational experience. Alternative A would provide continued implementation of the Western Snowy Plover Draft Recovery Plan. Alternative B provides for more habitat improvements for the Western snowy plover and Alternatives C and D would increase acreage of these improvements. Under any of the four alternatives, habitat improvements for Western snowy plovers would not impact recreation as there are no recreation facilities on the wave front.

Under Alternative B, additional small habitat management actions in areas where there are conflicts between recreation and species management could impact recreation, depending on the uses and duration of the management action. Additional management actions in Alternative C to reduce invasive plant populations and additional habitat improvements in Alternative D for introduction of native coastal prairie endemic species would only impact recreation if recreational use or access would have to be temporarily suspended for habitat activities in which case short-term negative negligible impacts to recreation may occur.

As for fisheries, management actions in Hathaway Creek under Alternative A would not impact recreation. Alternatives B and D do not have any fisheries management actions. Alternative C contains efforts to improve water movement on the Garcia River and Hathaway Creek as well as efforts to improve cover for fish on the Garcia River. These improvements could have a long-term beneficial negligible impact on recreation if populations of game fish increase and correspondingly angler catch rates increase.

4.14.2.9 Geysers

All four alternatives (Alternative C is the Preferred Alternative) would continue the current level of habitat protection and development as outlined in the *Clear Lake MFP* which would not impact recreation. Energy development policies regarding migratory birds would also not impact recreation.

4.14.2.10 Scattered Tracts

All four alternatives (Alternative C is the Preferred Alternative) would continue the current level of habitat protection and development as outlined in the *Clear Lake MFP*. Though passive management activities in all alternatives would let natural processes proceed without intervention in order to protect habitats, measures to prevent impacts to wildlife habitat could impact recreation depending on duration and extent of use limitations, closures, or other management actions. Impacts could be both long-term and/or short-term.

4.14.3 Impacts on Recreation Resources from Vegetation Management

Alternatives A and B policies to not allow noxious weed treatments at all management areas (except Cow Mountain and Cache Creek in Alternative A) would not impact recreation. Use of pesticides at Cow Mountain and Cache Creek in Alternative A and any management area in Alternatives C (Preferred Alternative for all management areas) and D could have localized negative short-term minor impacts on recreation if recreational use or access is temporarily suspended in order to spray weeds. Depending upon spray method used, there could be short-term negative impacts on the recreation setting from dead

vegetation patches if they are large patches that are visible from recreation facilities such as trails or campgrounds. If pesticide use is scheduled to occur in low use periods or avoid high use areas then impacts to recreation would be negligible. To avoid repetition, the aforementioned impacts on recreation from pesticide use are not repeated under each management area. Impacts from non-pesticide noxious weed treatments are described at the relevant management areas. Impacts from prescribed burning and non-fire fuels treatments are described in Section 4.14.10, Impacts on Recreation from Fire Management.

4.14.3.1 Common to All Management Areas

The policy to require visitors to use weed-free hay would have a negligible impact on recreation.

4.14.3.2 Cow Mountain

Alternative A would continue mechanical mowing treatments and hand pulling, Alternative B would not use mechanical or pesticide treatments, and Alternatives C and D would use pesticide to treat several weed species. Hand pulling under Alternative A and lack of treatments in Alternative B would have no impact on recreation. Mowing under Alternative A could have localized negative short-term minor impacts on recreation if recreational use or access is temporarily suspended in order to mow weeds. Mowing may also have minor impacts on the recreation setting and therefore on the recreational experience due to unnaturalness of the landscape and noise of activities. These impacts would be localized and short-term. See Section 4.14.3 for impacts on recreation from pesticide use.

4.14.3.3 Stornetta

Alternatives A and B would not allow noxious weed treatments and therefore would not impact recreation. Alternatives C and D include an array of potential noxious weed treatments including plowing moving, or pesticide use. Plowing or mowing may have minor impacts on the recreation setting and therefore on the recreational experience due to unnaturalness of the landscape and noise of activities. These impacts would be localized and short-term. Additionally, localized negative short-term minor impacts on recreation could occur if recreational use or access is temporarily suspended. See Section 4.14.3 for impacts on recreation from pesticide use.

4.14.3.4 Scattered Tracts

Alternatives A and B would not allow noxious weed treatments and therefore would not impact recreation. Alternatives C and D include an array of potential noxious weed treatments including plowing moving, or pesticide use. Plowing or mowing may have minor impacts on the recreation setting and therefore on the recreational experience due to unnaturalness of the landscape and noise of activities. These impacts would be localized and short-term. Additionally, localized negative short-term minor impacts on recreation could occur if recreational use or access is temporarily suspended. See Section 4.14.3 for impacts on recreation from pesticide use.

4.14.4 Impacts on Recreation Resources from Riparian and Wetland Habitats

All alternatives include efforts to determine and classify riparian/wetland conditions at Stornetta. This would not impact recreation.

4.14.4.1 Common to All Management Areas

Alternatives A and B would continue to let natural processes take place with management intervention only when disturbances could negatively impact riparian and wetland areas. Comparatively, Alternatives C (Preferred Alternative for all management areas) and D would develop and implement projects that would help riparian/wetland areas to achieve PFC. Any management intervention/projects under all alternatives could impact recreation if recreational use or access is temporarily suspended for management activities. Permanent alterations to recreational use/access in an area to attain PFC could have a variety of impacts depending on the change; trail relocation could have an adverse negligible impact, whereas closure of a recreation area could have an adverse minor to moderate impact depending on the location and visitor use level of the area.

4.14.5 Impacts on Recreation from Cultural Resources

Under all four alternatives, management actions regarding field evaluations, archaeological inventories, preventing damage and impacts to resources, issuance of permits, and maintaining relationships with tribes and educational institutions would continue and would have no impact on recreation. Educational and interpretive outreach programs to inform the public of cultural resource values could have a long-term minor beneficial impact on recreation by providing additional cultural information and opportunities that would enhance visitors' recreational experience at Ukiah Field Office lands.

4.14.5.1 Common to All Management Areas

Alternative A would continue existing policies and management of cultural resources and would not impact recreation. In addition to existing management, Alternative B would prioritize and increase law enforcement patrols and site monitoring at Cache Creek, portions of South Cow Mountain and Stornetta, as well as increase tribal collaboration, research, and public education efforts. Implementation of these efforts could have a minor beneficial impact on recreation from additional cultural information and opportunities to learn about cultural resources which would enhance visitors' recreational experience. In addition to existing management, Alternatives C (Preferred Alternative for all management areas) and D would take a slightly different approach than Alternative B and develop regional overviews for Cow Mountain and Knoxville, take a proactive approach to surveying, documenting, and evaluating newly acquired lands at Cache Creek and Stornetta, and identify at-risk sites throughout Ukiah Field Office lands. Implementation of these efforts would not impact recreation.

4.14.6 Impacts on Recreation Resources from Lands and Realty

Management of lands to protect resources, especially resources for which lands have been specially designated, would continue to maintain the recreational setting, opportunities, and experiences that Ukiah Field Office lands provide. Policies and management actions to acquire lands in all alternatives could impact recreation depending upon whether the acquisition facilitates public access, provides opportunities to open new recreation areas, and/or provides new linkages to adjacent recreation areas. Impact would vary by acquisition type and could range from negligible to major depending on the location of the acquisition and extent to which the acquisitioned land modifies current recreational experiences. Impacts would generally be considered beneficial and long-term with respect to supporting land acquisition for recreational use. Alternative C is the Preferred Alternative for lands and realty

decisions, with the exception of the Scattered Tracts. Alternative B is the Preferred Alternative for the Scattered Tracts management areas.

Retainment of existing lands (except some Scattered Tract lands in all alternatives) would maintain the existing recreational opportunities, settings, facilities, and experiences. Alternatives C and D (and A at Cache Creek) would allow the exchange of existing lands for lands that have greater management efficiency, would gain public values, or would serve important public purposes. Lands within the Cache Creek and Cedar Roughs WSAs would not be available for exchange. Exchanging lands could have both beneficial and adverse impacts on recreation ranging from negligible to major depending on the recreation opportunities/facilities/experiences/settings/access that were lost and those that were gained. Disposal of Scattered Tracts parcels under any alternative could have adverse impacts on recreation ranging from negligible to major depending on the recreation opportunities/facilities/experiences/settings/access that were lost from disposal.

As for access, management actions under each alternative to obtain legal public access or administrative access could have long-term beneficial impacts on recreation. Magnitude of impacts would depend on the type of access obtained, area to which access is obtained and the experiences it provides, as well as the amount of use that results from new access.

New ROWs would be located within or adjacent to existing ROW, to the extent practical, in order to minimize adverse environmental impacts and the proliferation of separate ROW. Alternative B would not designate ROW corridors, but would limit new communication sites at some management areas to existing communication sites or close them to communication sites (Knoxville, Cedar Roughs, Stornetta, Geysers). Alternatives C and D would designate ROW corridors and Alternatives B and D would not allow new ROW applications. Under Alternatives A and B, the Cache Creek WSA would be closed to communication sites except as allowed under BLM interim management policy. Limiting new ROWs or communication sites to existing locations would minimize cumulative impacts from changes to the recreation setting from additional development. New ROW or communication site development under any alternative either in a management area generally or designated ROW could have short-term negative negligible impacts on recreation if recreational use or access is temporarily suspended. Short-term negative impacts could also result from noise and visual disturbance to the recreation setting from development activities and traffic. If new ROW or communication site development is in an area with no such existing developments, long-term negative impacts to recreation could result from visual changes to the recreation setting. Impacts would depend on the type of development and the visibility of development. As for the avoidance area at Cache Creek in Alternative A, impacts would not occur unless ROW projects are developed.

4.14.7 Impacts on Recreation Resources from Special Designations

Continuing to manage WSAs to preserve their wilderness characteristics will continue to benefit recreation by maintaining the recreational opportunities, setting, and experiences associated with these lands. Continuing to manage existing ACECs to protect the special resources and values of these lands will continue to benefit recreation by allowing recreationists to see, learn, and appreciate these special resources/values and therefore enhance their recreational experience. Under all alternatives, there would be no change to the Cow Mountain, Berryessa or Geysers management areas. Under Alternatives B, C

and D, if allowable uses must be changed in the future due to designation and the protection of resources, impacts to recreation could occur and would depend on the changes to use.

In terms of Wild and Scenic Rivers, Alternatives A and D are similar in that all eligible segments would be managed under the protective management policies. However, in Alternative D, all eligible segments would be formally recommended to Congress as suitable for formal Wild, Scenic, or Recreation River designations. Alternative A would continue protective management with suitability determination made at a later date. Managing these eligible portions of river under the protective management policies related to free-flowing values, river-related values, and classification impacts will continue to benefit recreation by maintaining the characteristics, settings, and experiences these river portions provide. Unlike Alternative D, which would recommend all eligible segments for formal designation, Alternative C would recommend 5 segments of Cache Creek and 1 segment of the Garcia River for formal designation. These segments would be managed under the protective management policies which would have beneficial impacts on recreation by maintaining the characteristics, settings, and experiences these river segments provide. Eligible segments not formally recommended for designation would not be managed under the protective management policies. This could lead to degradation of the characteristics, settings, and experiences provided by these eligible river segments, which would have long-term negative impacts on recreation. Level of impact would depend on what alterations to the river segments or surrounding lands occurred. Converse to Alternatives A, C, and D, Alternative B would not manage any river portions under the protective management policies and would not recommend any segments for formal designation. This could lead to degradation of the characteristics, setting, and experiences provided by these eligible river segments, which would have long-term negative impacts on recreation. As above, level of impact would depend on what alterations to the river segments or surrounding lands occurred.

Alternative C is the Preferred Alternative for special designations management decisions in all management areas, except Cedar Roughs, Berryessa, and the Geysers. The Preferred Alternative for Berryessa and the Geysers is Alternative A, while Alternative B is preferred for Cedar Roughs.

4.14.7.1 Common to All Management Areas

Alternative A would maintain all existing WSAs and ACECs with no additional areas designated.

4.14.7.2 Knoxville

Under Alternative A there would continue to be no ACEC designated in this area. Alternatives B, C and D would designate an ACEC with successive alternatives adding additional acreage to the designated area. Under Alternative B, a 1,756 acre ACEC would be designated at the northernmost part of the management area, where no OHV routes exist.. Alternative C would add over 3,400 acres to the designation (for a total of 5,236 acres). Under Alternative D, the entire management area would become an ACEC, a significant increase in acreage compared to Alternatives B and C. Any trails that impact serpentine islands would be re-routed to protect the soil and vegetation. In the event of any future OHV trail development, any new trails would avoid serpentine soil islands. As these designations would not require changes to allowable uses (in particular, OHV use), there would be no impact on recreation.

4.14.7.3 Indian Valley

Alternative A would maintain the existing 40 acre Indian Valley Brodiaea ACEC and would not impact recreation. Alternative B would add 60 acres to this ACEC. If changes to allowable uses become necessary to protect resources, impacts on recreation could result, depending on what uses were prohibited. However, the ACEC would remain a small percentage of the management area, and use of the area is low, thus impacts would be negligible. Alternative C would expand the existing ACEC by 60 acres and in addition would designate a 3,990 acre Walker Ridge ACEC. OHV trail use would not be allowed within the ACEC. This could have an overall negligible to minor negative impact on recreation due to fewer OHV opportunities. For those OHV users that would be displaced, impacts could be minor to moderate, as other riding opportunities would remain nearby. Alternative D would designate more acreage to the Walker Ridge ACEC with 8,784 acres designated. With this designation, OHV trail use would not be allowed on 20 miles of existing routes; all OHV trails/routes would be converted to non-motorized recreation only. This decrease in OHV opportunities could have an overall minor to moderate impact on recreation due to significantly decreased OHV opportunities. For those OHV users that would be displaced, the impact on recreation could be moderate. However, OHV opportunities would remain in the non-ACEC area to the east of Walker Ridge.

4.14.7.4 Cache Creek

Alternative A would maintain the existing 32,000 acre WSA. Alternatives B, C and D would manage increasing acreages of land adjacent to the WSA for wilderness characteristics as well. Alternative B would manage 1,848 acres adjacent to the existing WSA for wilderness characteristics, Alternative C would manage an additional 3,065 acres for wilderness characteristics, and Alternative D would manage an additional 13,713 acres for wilderness characteristics. Motorized use and roads would not be allowed on lands managed for wilderness characteristics. No new ROWs or roads will be built on these lands. Activities such as mountain biking, horseback riding, and whitewater boating would continue to be allowed. Managing for wilderness characteristics would have a long-term beneficial impact on recreation by preserving the unique wilderness characteristics and recreational opportunities associated with these characteristics.

4.14.7.5 Cedar Roughs

At Cedar Roughs, Alternatives B, C and D would add 753 acres to the existing ACEC. This designation would not change allowable uses and therefore would not impact recreation.

4.14.7.6 Stornetta

Alternatives B, C and D would designate 887 acres at Stornetta as an ACEC. Interim rules related to allowable uses would not change and therefore recreation would not be impacted.

4.14.7.7 Scattered Tracts

Under Alternative A there would continue to be no specially designated areas within the Scattered Tracts area. Alternatives B, C and D build upon each other and include everything from the previous alternative. Alternative B would designate a 781 Black Forest ACEC. This designation would not affect allowable uses at the site and therefore would not impact recreation. In addition to Alternative B

management actions, Alternative C would designate the 5,000 acre Cedars ACEC and 40 acre Lost Valley ACEC. Currently in the Cedars area, the only recreation occurring includes tours led by the California Native Plant Society. If changes to this use were necessary to protect resources, impacts to recreation could occur depending on the change. In the Lost Valley area the existing OHV trail is officially closed and would remain so with ACEC designation. As the trail is already closed, there would be no impact on recreation from designation. Alternative D includes the management actions under Alternatives B and C and in addition would designate the Blue Ridge ACEC (13,640 acres) and Quail Ridge ACEC (558 acres). Allowable uses on the Blue Ridge Trail would not be altered and therefore ACEC designation would not impact recreation. As for Quail Ridge, public access is limited and the area must be accessed by boat and across BOR lands. There are no recreation facilities or existing opportunities that would be affected, therefore ACEC designation would not impact recreation.

4.14.8 Impacts on Recreation Resources from Forest Management

There is no timber harvesting under all four alternatives (Alternative A is the Preferred Alternative), thus there is no impact on recreation.

4.14.9 Impacts on Recreation Resources from Livestock Grazing Management

Under all four alternatives, Stornetta would be available to grazing for the next 10 years. As this is a continuation of historical use and would be an element of the setting from the beginning of public use of the land, this would not impact recreation. Under Alternatives A, B and C, the only new grazing allowed would be for weed eradication and/or maintenance of fire lines or prescribed burns. Alternative D has a different policy and would allow grazing in the entire management area including areas burned in wildfires after 2 growing seasons if standards and guidelines are met. Both of these policies could have a short-term minor negative impact on recreation due to a disruption of the existing recreation setting if new grazing areas were near recreation facilities. Long-term impacts could be negligible as recreationists adapt to a new recreation setting. If grazing locations are away from high use areas or are not grazed during high recreation use periods, then impacts would likely be negligible. To avoid repetition, these impacts are not mentioned for each management area unless there is an exception to one of the policies.

4.14.9.1 Cow Mountain

Alternatives A (Preferred Alternative) and B would maintain the area as it is now with no grazing leases, therefore there would be no impact on recreation. Alternative C would allow for portions of 4 former allotments to be available for grazing in addition to making other oak woodlands and grass glades available to grazing. Alternative D would go even further opening all of the four former allotments to grazing as well as the rest of the management area. If new grazing areas were near recreation facilities in Alternatives C and D, there could be short-term minor negative impacts on recreation due to a disruption of the existing recreation setting, especially because there is no existing grazing in this area. Long-term impacts could be negligible as recreationists adapt to a new recreation setting. If grazing locations are away from high use areas or are not grazed during high recreation use periods, then impacts would likely be negligible.

4.14.9.2 Knoxville

Current allotments would continue to be available to grazing under Alternatives A, C (Preferred Alternative), and D and would have no impact on recreation. Alternative B would make the allotments unavailable to grazing upon relinquishment of current leases or sale of base property. This could result in long-term negligible beneficial impacts on recreation for those users who prefer not to share recreation areas with grazing livestock.

4.14.9.3 Indian Valley

Current allotments would continue to be available to grazing under Alternatives A, C (Preferred Alternative), and D and would have no impact on recreation. Alternative B would make the allotments unavailable to grazing upon relinquishment of current leases or sale of base property. This could result in long-term negligible beneficial impacts on recreation for those users who prefer not to share recreation areas with grazing livestock.

4.14.9.4 Cache Creek

All alternatives (Alternative A is the Preferred Alternative) would maintain the area as it is now with no grazing leases and therefore would not impact recreation. All alternatives would also only allow new grazing for weed eradication and/or maintenance of fire lines or prescribed burns. If new grazing areas were near recreation facilities there could be short-term minor negative impacts on recreation due to a disruption of the existing recreation setting, especially because there is no existing grazing in this area. Long-term impacts could be negligible as recreationists adapt to a new recreation setting. If grazing locations are away from high use areas or are not grazed during high recreation use periods, then impacts would likely be negligible.

4.14.9.5 Cedar Roughs

The current allotment would continue to be available to grazing under Alternatives A, C (Preferred Alternative), and D and would have no impact on recreation. Alternative B would make the allotment unavailable to grazing upon relinquishment of current leases or sale of base property. This could result in long-term negligible beneficial impacts on recreation for those users who prefer not to share recreation areas with grazing livestock.

4.14.9.6 Berryessa

Current allotments would continue to be available to grazing under Alternatives A and D and would have no impact on recreation. The Rocky Ridge allotment would continue to be available for grazing under Alternative C (Preferred Alternative) and would have no impact on recreation. The Portuguese Canyon allotment would only be available for grazing for weed control/hazardous fuels reduction. See 4.14.9 for impacts from this policy. Alternative B would make the allotments unavailable to grazing upon relinquishment of current leases or sale of base property. This could result in long-term negligible beneficial impacts on recreation for those users who prefer not to share recreation areas with grazing livestock.

4.14.9.7 Stornetta

Under Alternatives A and B, after expiration of the current lease, the land would only be available to grazing for weed control and/or fuels reduction, which would not impact recreation. Under Alternative C (Preferred Alternative), the area would be assessed to determine what level of livestock grazing would be allowed. Until assessments were completed, the area would be considered for livestock grazing subject to regulations and policies, as well as cooperation with affected agencies and the public. Any facilities such as fencing or water development would be limited to protect the scenic character of the area. If grazing is continued, there would be no impact to recreation. Additional facilities could have a negative negligible impact on recreation dependent upon visibility to recreationists. Under Alternative D the area would continue to be available to grazing and an Allotment Management Plan would be done, both of which would not impact recreation. Additional facilities to attain uniform utilization and maximum forage production could have a negative negligible impact on recreation dependent upon visibility to recreationists and extent of facilities.

4.14.9.8 Geysers

All alternatives (Alternative A is the Preferred Alternative) would maintain the area as it is now with no grazing leases and therefore would not impact recreation. All alternatives would also only allow new grazing for weed eradication and/or maintenance of fire lines or prescribed burns. If new grazing areas were near recreation facilities there could be short-term minor negative impacts on recreation due to a disruption of the existing recreation setting, especially because there is no existing grazing in this area. Long-term impacts could be negligible as recreationists adapt to a new recreation setting. If grazing locations are away from high use areas or are not grazed during high recreation use periods, then impacts would likely be negligible.

4.14.9.9 Scattered Tracts

Alternatives A and C (Preferred Alternative) would continue to make the current allotments available to grazing and therefore would have no impact on recreation. Alternative D would be slightly different in that one existing allotment and all other areas would be available for grazing or temporary grazing if the lands are designated for disposal. If new grazing areas were near recreation facilities there could be short-term minor negative impacts on recreation due to a disruption of the existing recreation setting. Long-term impacts could be negligible as recreationists adapt to a new recreation setting. If grazing locations are away from high use areas or are not grazed during high recreation use periods, then impacts would likely be negligible. Comparatively Alternative B would make the allotments unavailable to grazing upon relinquishment of current leases or sale of base property. This could result in long-term negligible beneficial impacts on recreation for those users who prefer not to share recreation areas with grazing livestock.

4.14.10 Impacts on Recreation Resources from Fire Management

Under all of the alternatives (Alternative C is the Preferred Alternative for all management areas), a FMP will be prepared which would incorporate policies and management actions regarding wildfire suppression, fuels management, prescribed burning, rehabilitation, stabilization and restoration as well as efforts for fire prevention, risk mitigation, and education. Wildfire suppression policies acknowledge that WSAs and SRMAs need special suppression tactics to help maintain the recreational setting and

experiences of these areas and would help to minimize impacts on recreation in these areas from wildfires.

General fuels management actions would not impact recreation. New fire breaks, though beneficial for public safety, could have negligible to minor impacts on the recreation setting depending on their size and location relative to recreation facilities and use areas. Fuels management activities related to prescribed burning and mechanical treatments are discussed below.

Under all alternatives, each management area would generally have differing goals for average annual acres of prescribed burns of which the decadal total could relate to a single project within the ten year period or several projects. Prescribed burning at any management area could have localized short-term impacts on recreation if recreational use or access was temporarily suspended due to prescribed burning, especially during high use periods or special events. Prescribed burns, especially large acreage burns, could have short-term minor adverse impacts on the recreation setting, visually both from burned vegetation and smoke, and therefore affect the recreational experience if burns are near recreation facilities such as trails and campgrounds. If prescribed burns are done frequently very close to high use trails, campgrounds, or access roads, impacts could be long-term moderate and adverse. If prescribed burns are sensitive to location, timing, and frequency, impacts on recreation would be short-term and negligible. Potential negligible to minor beneficial impacts could arise after burns from an enhanced recreation setting due to revitalized vegetation and appearance of wildflowers in burned areas. Impacts could be short to long-term. Impacts to recreation would be as described above for each management area with cumulative effects of increased burned acreage potentially magnifying impacts to recreation depending on location, timing, and frequency of burns. Impacts could be short-term to long-term major adverse if significantly large portions of visible land along trails or around campgrounds is burned. Impacts on recreation from wildfires and prescribed burns would be the same.

Management actions to use non-fire fuels treatments under Alternatives A, C, and D could have localized negative short-term impacts on recreation if recreational use or access is temporarily suspended in order to bring in equipment or fell trees. Noise associated with felling trees may also have localized negative short-term impacts on the recreation setting and therefore the recreational experience if activities are audible to visitors. If felling activities avoid high use areas or peak times of the year then impacts to recreation would be negligible. Alternative B would not prescribe mechanical treatment for any management area and would not impact recreation.

Fire rehabilitation, stabilization, and restoration actions would have a long-term beneficial minor impact on recreation by minimizing the negative visual effect of burned areas on the recreation setting. Management actions to educate the public regarding fire risk and prevention measures would have a long-term negligible beneficial impact on the visitor experience by increasing awareness and knowledge of visitors and local recreation users.

4.14.11 Impacts on Recreation Resources from Minerals

Under all alternatives, existing policies regarding mineral development in WSAs would remain the same and would not impact recreation as WSAs are closed to locatable mineral activities that require reclamation, mineral materials disposal, or mineral activities that degrade wilderness values. The alternatives for energy and minerals relate to where locatable mineral exploration and development or

fluid mineral leasing would not be allowed (withdrawal areas). Alternative A maintains existing withdrawals for both locatable minerals and fluid mineral leasing. Alternative B proposes additional withdrawal areas and Alternatives C and D (same as C) propose even more withdrawal areas/acreage. For management areas under any alternative that are not withdrawn, impacts from new mineral developments or leasing could include but are not limited to: short-term or long-term disturbance of the recreation setting from noise or visual changes (both physical/landscape changes and from increased numbers of authorized vehicles), short-term suspension of recreational use or access, long-term loss of recreational lands and opportunities, conflicts with ROS classification, short-term or long-term relocation of recreational facilities, unauthorized use of new roads – primarily off-road two track trails, and increased safety concerns including changes to air quality. Impacts could range from negligible to major and would depend on level of use, seasonality, and duration. Compliance with NEPA may reveal additional impacts. For management areas or part of areas that become withdrawn from mineral development, the above impacts would not occur.

4.14.12 Impacts on Recreation Resources from Wind Energy

Under all four alternatives, all wind energy developments would be subject to Wind Energy BMPs (see Appendix I) that would require projects to avoid, minimize or mitigate impacts to resources and land uses, integrate site design elements with the landscape, create access road siting and management plans, develop "good housekeeping procedures" to keep the site clean, develop measures to ensure safety for visitors, and keep noise to a minimum. All of these BMPs would help new wind developments reduce or avoid impacts to recreation. The alternatives for wind energy revolve around where to exclude or avoid new wind development from occurring. Alternative A does not include any exclusion or avoidance areas. Alternative B proposes eight exclusion areas with Alternatives C and D proposing 7 of the 8 exclusion areas in Alternative B and an additional exclusion area. An avoidance area is also proposed under Alternative C. For management areas that are not excluded from wind energy developments under any alternative, impacts from new wind energy developments could include but are not limited to: short-term or long-term disturbance of the recreation setting from noise or visual changes (both physical/landscape changes and from increased numbers of authorized vehicles), short-term or long-term relocation of recreational facilities to make way for or safely avoid turbine areas, short-term suspension of recreational use or access, long-term loss of recreational lands and opportunities, conflicts with ROS classification, unauthorized use of new roads – primarily off-road two track trails, and increased safety concerns. Impacts could range from negligible to major and would depend on level of use, seasonality, and duration. Compliance with NEPA may reveal additional impacts. For management areas or part of areas that become excluded from wind energy development, the above impacts would not occur. As for avoidance areas, impacts would not occur unless wind energy projects are developed.

Alternative B is the Preferred Alternative for wind energy management decisions in Cow Mountain, Cache Creek, Cedar Roughs, Stornetta, the Geysers, and the Scattered Tracts. Alternative D is the Preferred Alternative for the Knoxville, Indian Valley, and Berryessa management areas.

4.14.13 Impacts on Recreation Resources from Travel Management and Route Designation

Travel management policies would continue to benefit recreation by providing access to recreation areas and facilities. Travel management would not change under all four alternatives for the Indian Valley

management area. Impacts from changes to trails and OHV routes can be found in Section 4.14.14, Impacts on Recreation from Recreation Management.

4.14.13.1 Cow Mountain

Alternative A would continue current travel management actions and policies at both North and South Cow Mountain areas. At North Cow Mountain, Alternative B would close the Water Tank Spur Road (3.4 miles) whereas Alternatives C (Preferred Alternative) and D would leave the road open and additionally would open the gate at the end of this road and allow public vehicle access (street legal vehicles only) to five other roads (13. 86 miles total). Alternative C would allow public access to these 5 roads during the general deer season and Alternative D would allow year-round access. Closing the Water Tank Spur Road in Alternative B would have long-term negligible negative impact on recreation because this is currently a dead-end road that does not provide access to anything. Comparatively, Alternative C would have a long-term minor beneficial impact on recreation by providing additional hunting access. Alternative D would have a long-term minor to moderate impact on recreation by providing access to areas that are currently not available to recreation. Level of impact would depend on the amount of use on these roads; whether use is mainly just for hunting or if other visitors use these roads for sightseeing or other activities. Alternatives B, C and D would all rehabilitate some roads, particularly those where illegal dumping is occurring. Alternative B would rehabilitate 19.52 miles of roads whereas Alternatives C and D would only rehabilitate 5.66 miles of roads because the other 13.86 miles would be opened to the public either during deer season or all year. Rehabilitating roads under all three alternatives would have long-term negligible to minor beneficial impacts on recreation by enhancing the continuity of the landscape and thus enhancing the recreation setting. Access would not be decreased because these roads are already closed to the public and therefore rehabilitating them would not impact public access. Under all three alternatives the Radio Tower and Rifle Range Roads would remain administrative/official use only. This would not impact recreation.

At South Cow Mountain, Alternative B would close 24.75 miles of road compared to Alternatives C and D which would close 12.28 miles of road, about half the mileage of Alternative B. Impacts on recreation from Alternative B would be negative long-term minor due to closure of roads used for OHV activities. Only 12.09 miles of the 24.75 miles of road to be closed are currently maintained, representing about 13 percent of the total mileage of maintained roads. Therefore it is likely that most users that use the roads to be closed could use the other maintained roads. The roads to be closed that are not maintained in Alternative B are also the roads to be closed under Alternatives C and D. These roads represent a small fraction of the roads available in the South Cow Mountain area and therefore impacts from these two alternatives would likely be long-term negligible.

4.14.13.2 Knoxville

Alternative A would continue current travel management actions and policies. Under Alternative B, 9.1 miles of roads would be closed to all motorized use. Alternatives C (Preferred Alternative) and D would close fewer miles of road (5.35 miles), consisting of all but two of the same roads closed under Alternative B. The total closure of 9.1 miles of roads in Alternative B represents less than 20 percent of year-round accessible roads within the management area. Therefore impacts from Alternative B would be long-term negative but minor because a large portion of roads would still be available for use. Total closure of 5.35 miles of roads in Alternatives C and D represent 11.5 percent of year-round accessible

roads in the management area. Therefore impacts from Alternatives C and D would be negative long-term but negligible because the vast majority of roads would continue to be open to recreation. Under all four alternatives, 5.05 miles of road would be rehabilitated and used for non-motorized activities. There are trespassing issues associated with these routes. Closing these routes would have long-term beneficial impacts on recreation by reducing conflicts with adjacent property owners and offering non-motorized only facilities which do not exist in this area. However, there could also be long-term negligible negative impacts for OHV users by decreasing the amount of access and riding opportunities. Additionally Alternative D would allow year round use of Adam's Ridge Road. Under the other three alternatives this road is only open during the general deer hunting season. Allowing year-round use would provide additional OHV opportunities and access which could have minor beneficial impact for these users desiring to use this remote part of the management area.

4.14.13.3 Cache Creek

All four alternatives (Alternative A is the Preferred Alternative) would close two roads, Roadkill Spur and Roadkill Café Road for a total of 2.7 miles. The Spur Road passes through sensitive resources and the Café Road is not maintained and does not have legal access. The Spur Road is to be rehabilitated and the Café Road would be administrative/official use only. Closing these two roads would have a long-term negligible negative impact on recreation due to slightly decreased access, however rehabilitating the Spur Road would protect sensitive resources and would provide more continuity to the landscape thus enhancing the recreation setting.

4.14.13.4 Cedar Roughs

Alternative A (Preferred Alternative) would continue current travel management actions and policies. Alternative B would close and rehabilitate 7.68 miles of existing jeep roads that do not have legal public access for vehicles but are currently open to mechanized and non-motorized use. Only non-motorized use would be allowed after rehabilitation. This could have a negligible beneficial impact on recreation by improving the recreation setting, but could have a negative impact on recreation for adjacent landowners that currently use these roads for OHV use due to loss of opportunities. Level of impact for adjacent landowners would depend on how much they use these abandoned roads for recreation. Alternatives C and D would not change allowable uses on these jeep roads and therefore would not impact recreation.

4.14.13.5 Berryessa

Alternative A (Preferred Alternative) would continue current travel management actions and policies at this area. Alternative B would remove and rehabilitate all existing roads and fire breaks (with the exception of the radio tower road) whereas Alternatives C and D would acquire legal public access and allow non-motorized recreation on all existing roads and fire breaks. Alternative D would also allow motorized recreation on 12.75 miles of roads. Mechanized and motorized (Alternative D only) recreation would be limited to designated roads and trails. As there is no public access on the roads closed in Alternative B, only adjacent landowners that currently use these roads for recreation would be impacted. Impact to these landowners would be negative and long-term; level of impact would depend on how much they used these roads for recreation. Rehabilitation of these roads for non-motorized use only would provide facilities (trails) which currently do not exist in this management area and could have long-term beneficial impacts for non-motorized users. Level of impact would depend on the increase in use from new facilities. Considering that the public cannot currently legally access the Berryessa area,

Alternatives C and D would have long-term beneficial impacts on recreation by both allowing recreationists to enter the area and providing facilities and opportunities for hiking, biking, and equestrian use. By also allowing motorized use in Alternative D, long-term beneficial impacts could result for some recreationists to the availability of new access and facilities for both motorized and non-motorized activities. Level of impact could be moderate to major depending on demand for use. Alternative D could also have long-term negative impacts on recreation if conflicts arise between different types of visitors using the same facilities. As the area does not currently have public access, there could be some competition among users to visit and establish a history of use in the area (e.g., hikers versus motorized users).

4.14.13.6 Stornetta

Alternative A would continue current travel management actions and policies. Alternative B would remove and rehabilitate 3.05 miles of existing interior roads whereas Alternative C would use existing roads for mechanized and non-motorized use. Comparatively, Alternative D would develop vehicle access locations and use the existing closed interior routes for vehicular access as well as mechanized and non-motorized recreation. Closing roads in Alternative B would not impact recreation as there is no public access to these roads at present. Rehabilitating these roads could have a long-term beneficial impact on recreation by enhancing the continuity of the landscape. Alternative C (Preferred Alternative) would allow hikers, bikers, and equestrians to use some of the existing roads in Stornetta which are currently available to administrative access only. This could have long-term moderate beneficial impacts on recreation due to increased opportunities for several types of recreational use and increased land base available for recreation. Alternative D would develop pullouts and parking areas, allow street legal vehicles year-round use of interior roads, as well as allow non-motorized and mechanized use of these roads. This could have long-term moderate beneficial impacts on recreation for some recreationists due to increased opportunities for several types of recreational use and increased land base available for recreation. However, this alternative could have negative impacts for some recreationists by changing the recreation setting and character of the Stornetta area from a low use, quiet area with no vehicular access to an area with louder, more visible uses (sightseeing by car) with both motorized and non-motorized users using the same facilities. This may displace current recreation users of the Stornetta area. Conflicts could also arise on the roads between motorized users and non-motorized users.

4.14.13.7 Geysers

Alternative A would continue current travel management actions and policies. Currently 4.75 miles of roads are open to street legal vehicle use only during the general deer hunting season, but are open year round to mechanized recreation. Alternative B would close these roads to all uses except administrative/official use whereas Alternatives C (Preferred Alternative) and D would allow year-round mechanized, non-motorized and motorized use of these roads. As there is limited public access on these roads closed in Alternative B, only hunters and adjacent landowners that currently use these roads for recreation would be impacted. Impacts to hunters and landowners would be negative and long-term. Level of impact would depend on how much use the roads received during hunting season and year round from adjacent landowners. Due to the developed landscape, noise, and lack of recreation facilities at the Geysers area, it is unlikely that many more non-sightseeing recreationists will visit the area due to year-round access available in Alternatives C and D. Some users may come to see the geothermal facilities and this could have both positive and negative impacts on recreation; more people may learn

about geothermal energy production and recreational use may increase, but public safety and geothermal operations could become an issue if visitors damage facilities or injure themselves from inappropriate behavior at geothermal facilities. Also, conflicts could potentially result with roads open to motorized as well as non-motorized use.

4.14.13.8 Scattered Tracts

Alternative A would continue current travel management actions and policies. Alternative B would remove and rehabilitate existing routes and fire breaks. Comparatively, Alternatives C (Preferred Alternative) and D would acquire legal public access and develop public vehicle access as well as use existing routes for vehicular and non-motorized recreation. Alternative B would most likely impact only adjacent landowners as there is no legal public access to most scattered tract parcels. Impacts to adjacent landowners would be negative and long-term; level of impact would depend on how much they use existing roads for recreation. Alternatives C and D could allow the public to access lands that are currently not open to the public. This would have a long-term beneficial impact on recreation by increasing the amount of lands available to recreation as well as provide facilities (existing routes) for motorized, mechanized and non-motorized recreation. Conflicts could occur if all three types of recreation attempt to use the same roads at the same time. Level of impact would depend on the amount of access provided, location of area opened to recreation, the opportunities available at new areas, amount of use at new areas, and any conflicts that arise.

4.14.14 Impacts to Recreation Resources from Recreation Resources

All four alternatives would continue policies regarding visitor information and adequate maps, stressing compliance with "Leave No Trace" and "Tread Lightly" principles; maintenance of roads, trails, signs and facilities; resource protection; visitor safety; special recreation permits; cooperative management; exclusionary fence and barrier construction; enforcement of regulations; and Universal Accessibility Standards. These policies would have a long-term moderate beneficial impact on recreation.

By providing improved visitor information and maps, visitors would be more informed about the recreation opportunities and facilities available and area regulations, would leave recreational areas and trails in better condition, and fewer visitors would get lost in the rugged terrain. Adequate and timely maintenance of roads, facilities, trails and signs would also have a long-term moderate beneficial impact on recreation by providing opportunities for visitors to easily obtain directional information and avoid access constraints which could detract from the visitor overall experience.

Under all of the alternatives, policies would remain in place to provide supplementary rules and regulations to protect resources, visitor safety, and the surrounding community. Examples of such rules could include campfire prohibitions during extreme fire conditions, disallowing motorized boat use on Hathaway Creek, and requiring weed free livestock feed for equestrian use within the Cache Creek Natural Area. Rules such as these would have minor impacts on recreation because visitor behavior or equipment usage would only have to change slightly to comply with the new rules. Proposed Supplementary Rules for the Stornetta Management Area are in Appendix E. Also, most visitors do not normally engage in the behaviors or activities affected.

Policies regarding special recreation permits would have a negligible beneficial impact on recreation by maintaining consistent use within the management zones, and prohibiting incompatible use which could create conflicts with other recreational users in that zone.

Encouraging and promoting cooperative management effort policies would result in no impacts on recreation. Promoting volunteerism would have minor to moderate beneficial impacts on recreation by potentially increasing the amount of basic facility development and maintenance accomplished, and encouraging a sense of stewardship among recreation users.

Policies to control unauthorized visitation from public land onto private land and to restrict vehicle use within designated areas would have a long-term minor beneficial impact on recreation. These policies would maintain recreational use within the appropriate BLM boundaries, and reduce boundary conflicts due to unauthorized recreational use as well as to reduce conflicts between unauthorized vehicle use and other allowable uses.

Enforcing existing regulations and applying other regulations for visitor safety or resource protection would have a long-term moderate beneficial impact, because the regulations would help to reduce visitor safety incidents, conflicts with other users, and would ensure additional protection of sensitive resource areas. These benefits would allow visitors to have an improved recreational experience.

Policies ensuring that Universal Accessibility Standards under the Americans with Disabilities Act are met would have a long-term moderate beneficial impact on recreation. Visitors with disabilities would have improved recreational experiences because of improved access to recreational areas, trails, campgrounds and other facilities.

Any visitor use allocation system would redistribute and modify visitor use patterns. These measures would result in a long-term beneficial impact by increasing the quality of the recreational experience for those visitors. Encounters with other visitors, competition for prime camping locations, and noticeable resource impacts would be diminished. However, some visitors would be displaced by applying use allocation measures, both geographically and temporally.

4.14.14.1 Methodology for Use Level Impact Assessment

Assessing the effects of recreation management on future recreation use levels within the Ukiah Field Office relies on information about the types of use and current use levels of each management area, information on participation trends for specific activities, population projections for northern California counties that are the source of most recreation visitors, and a set of assumptions related to use allocation and facility capacities. Each of these types of information was applied in a several-step process to develop use level projections for each Management Area and the Ukiah Field Office as a whole. The baseline for the projections was provided by recreation use estimates compiled within the BLM RMIS for fiscal year 2004 (October 1, 2003 to September 30, 2004). Because the desire was to use 2005 as the base year, the fiscal year 2004 use level data was adjusted upward to provide an estimate for 2005 use levels. This adjustment was based on the same regional demand data, as listed below, that was used in the subsequent projections for use levels at each management area for the next 25 years. Projections were made for each five-year period over those 25 years (i.e., 2010, 2015, 2020, 2025, and 2030).

The steps in developing use level projections for this portion of the impact assessment were as follows:

- Determination of current (FY 2004) use levels and primary activities for each management area (drawn from RMIS system);
- Determination of projected growth or decline in participation in primary activities for each management area (drawn from published regional data derived from the National Survey on Recreation and the Environment (Cordell et al. 2004);
- Adjustment of the projected increase in recreation use based on a comparison of the population increase for the Pacific Region used in the NSRA projections with a weighted average population increase projection for the top 10 counties that contribute to Ukiah Field Office visitation;
- Adjustment to use levels and contributions of individual activities to growth in recreation use based on assumptions for each alternative (the assumptions are detailed below); and
- Adjustment based on the relative scarcity of some recreation opportunities, such as OHV trail riding and whitewater boating with few substitute areas available, and the relative abundance of other opportunities such as hiking, picnicking, and primitive camping.

4.14.14.2 Assumptions and Use Projections by Alternative

Following are the use allocation and use constraint assumptions developed for each Alternative, and the corresponding projections for expected growth in recreation use. Recreation use was projected in visitor days; a visitor day is 12 hours spent by one person within one or more management areas.

Alternative A – No Action; Continue Current Management (Preferred Alternative for Knoxville and Berryessa)

- No use allocation system – so no limits on the number of visitors.
- Campground use will not reach capacity limits during projection period, based on relatively low current occupancy rates at most sites and expected camping activity growth rates.
- Continued opportunities for growth of use at trailheads and other day use sites at Cache Creek, North Cow Mountain, Indian Valley.
- Continued opportunities for growth in use of OHV areas.
- Increased use at Stornetta and Black Forest due to increased public awareness and new public access provided.
- Increased use at Cache Creek due to previously planned construction of new trailhead, wildlife viewing site, and other amenities at Cowboy Camp.

Alternative B

Alternative B proposes to introduce an ROS allocation of Ukiah Field Office-administered lands that emphasizes areas designated as Frontcountry Zones (41 percent) and Middlecountry Zones (28 percent). About 19 percent of lands are allocated to Primitive zoning under Alternative B (all at Cache Creek). Rural Zones comprise about 2 percent of lands; no areas are zoned Urban.

The following assumptions derived from management actions proposed under Alternative B were used in developing use projections:

- A prohibition on special use permits would have significant negative effects on visitation at South Cow Mountain due to the loss of the annual competive motorcycle event, and at Cache Creek due to the loss of commercial rafting and other commercial recreation services in the area.
- A prohibition on mechanized uses in most areas would reduce visitation to several management areas. In particular, management of 42,000 acres as a primitive zone in the core area of Cache Creek, where mountain biking is a popular activity, would prohibit mountain bikes from most Cache Creek trails and would have a moderate effects on use levels.
- A prohibition on motorized use at North Cow Mountain, Indian Valley, Cache Creek (allowed on potential rural and Urban Zone acquisitions), Cedar Roughs, Berryessa, and scattered tracts would have a moderate effect on use levels at these areas, particularly during the hunting season.
- Removal of some existing routes at Knoxville would reduce visits by OHV users to a moderate degree; a minor reduction in trail miles at Cow Mountain would not affect use levels.
- Development of new trails on the east side of the Indian Valley area and at Stornetta would increase use of these areas.
- Management of 1,848 acres of Cache Creek adjacent to existing Wilderness Study Areas for wilderness values would have a minor effect on use levels by restricting mountain bike use on certain trails.

Table 4-6: Recreation Use Projections-Alternative A (Visitor Days)

YEAR	MANAGEMENT AREA						TOTAL (RANGE OF VISITOR DAYS)[2]	GROWTH IN VISITOR DAYS	% GROWTH
	CACHE CREEK	COW MTN	KNOXVILLE	INDIAN VALLEY	LITTLE DARBY	DISPERSED USE [1]			
2005	52,671	73,439	29,173	10,438	245	186,338	352,304	Base	Base
2010	57,308	80,079	31,811	11,556	269	203,364	384,388 (365,168 - 403,607)	32,025	9.11%
2015	62,033	86,845	34,498	12,644	292	220,982	417,293 (396,428 - 438,157)	32,905	8.56%
2020	66,403	93,103	36,984	13,650	312	237,278	447,730 (425,343 - 470,116)	30,437	7.29%
2025	70,238	99,423	39,495	14,618	331	253,561	477,665 (453,782 - 501,548)	29,935	6.69%
2030	73,830	105,342	41,846	15,524	348	268,811	505,701 (480,416 - 530,986)	28,036	5.87%

1: Dispersed use includes use not associated with developed recreation sites at Indian Valley, as well as all use at Cedar Roughs, Geysers, Berryessa SRMA, and most scattered tracts (none of which have developed recreation sites). Dispersed used at the other Management Areas is included in the values shown for each area.

2: Range of visitor days is based on +/- 5% bracketing around the initial projection, which recognizes the limits of the accuracy of the projections.

Table 4-7: Recreation Use Projections-Alternative B (Visitor Days)

YEAR	MANAGEMENT AREA						TOTAL (RANGE OF VISITOR DAYS)[2]	GROWTH IN VISITOR DAYS	% GROWTH
	CACHE CREEK	COW MTN	KNOXVILLE	INDIAN VALLEY	LITTLE DARBY	DISPERSED USE [1]			
2005	52,671	73,439	29,173	10,438	245	186,338	352,304	Base	Base
2010	45,847	72,071	15,905	11,556	269	203,364	349,013 (331,562 – 366,464)	-3,291	-0.93
2015	49,626	78,160	17,249	12,644	292	220,982	378,953 (360,005 – 397,901)	29,940	8.58
2020	53,122	83,792	18,492	13,650	312	237,278	406,647 (386,315 – 426,979	27,694	7.31
2025	56,191	89,480	19,747	14,618	331	253,561	433,928 (412,232 – 455,624)	27,281	6.71
2030	59,064	94,808	20,923	15,524	348	268,811	459,478 (436,504 – 482,452)	25,550	5.89

1: Dispersed use includes use not associated with developed recreation sites at Indian Valley, as well as all use at Cedar Roughs, Geysers, Berryessa SRMA, and most scattered tracts (none of which have developed recreation sites). Dispersed used at the other management areas is included in the values shown for each area.

2: Range of visitor days is based on +/- 5% bracketing around the initial projection, which recognizes the limits of the accuracy of the projections.

Alternative C (Preferred Alternative for Cow Mountain, Indian Valley, Cache Creek, Cedar Roughs, Stornetta, the Geysers, and Scattered Tracts)

Alternative C proposes to introduce an ROS allocation of Ukiah Field Office-administered lands that is identical to Alternative B at all management areas with the exception of Cache Creek. At Cache Creek, the area allocated to Backcountry is greatly increased (from 10 percent to 59 percent of the area) primarily due to over 30,000 acres being shifted from Primitive zoning. Over 9,000 acres are changed from Primitive to Middlecountry zoning. Frontcountry zoning at Cache Creek also decreases under Alternative C by about 1 percent. Overall, Alternative C allocates the greatest amount of land to the Frontcountry Zone (41 percent), while Middlecountry zoning is about 32 percent of the total. Backcountry Zoned lands comprises about 25 percent of the total. Rural Zones remain unchanged from Alternative B at 2 percent of all lands.

The following assumptions derived from management actions proposed under Alternative C were used in developing use projections:

- Although a comprehensive use allocation system would be developed for all management areas within five years, restrictions on use are not assumed to be necessary and would occur only if unacceptable deterioration in resource and/or social conditions were documented and warranted. Therefore, no effects on use levels area assumed.
- A prohibition on motorized use at Cedar Roughs, Berryessa, and some scattered tracts, and limting motorized use to deer hunting season at Geysers would have a minor effect on use levels at these lightly used areas.
- Possible establishment of nominal fees for overnight use is assumed to have minor effects on use levels.

- Special use permits would continue to be issued for annual competive motorcycle events at South Cow Mountain and commercial whitewater rafting operations at Cache Creek SRMA; applications for similar permits would be accepted where appropriate and in keeping with management plans. Effects of these actions on use levels is assumed to be minor.
- A minor increase in visits to these areas is assumed as a result of facility development focused on trailheads and trails at several management areas, as well as improvement or expansion of primitive camping facilities at Cow Mountain, Indian Valley, and Cache Creek.
- Acquistion of vehicular access at Berryessa and Geysers would provide public access into areas where access was minimal or non-existent; it is assumed these actions would result in a moderate increase use of those areas from current negligible levels.
- Allowing mountain bike use and development of trailheads and non-motorized trails with benches and a foot bridge over the Garcia River at Stornetta, and improved trailheads and possible new trails at Cedar Roughs would increase use of those areas. Visits to Cedar Roughs are assumed to increase moderately from current neglible levels. Due to its prime coastal location and Highway 1 access, visits to Stornetta are assumed to increase substantially from current unknown but assumed low levels.
- Minor removal of problem trails at Cow Mountain and Knoxville is assumed to have minimal effects on use levels. Creation of 5-10 miles of new trails at each area is possible but is not assummed.
- Acquisition of legal vehicle access to Berryessa, expansion of vehicle access at Geysers from seasonal to year round access, and development of vehicle access to Black Forest and other scattered tracts is assumed to have minor effects on use levels.

Table 4-8: Recreation Use Projections-Alternative C (Visitor Days)

YEAR	MANAGEMENT AREA						TOTAL (RANGE OF VISITOR DAYS)[2]	GROWTH IN VISITOR DAYS	% GROWTH
	CACHE CREEK	COW MTN	KNOXVILLE	INDIAN VALLEY	LITTLE DARBY	DISPERSED USE [1]			
2005	52,671	73,439	29,173	10,438	245	186,338	352,304	Base	Base
2010	63,205	96,095	38,173	12,711	269	213,532	413,818 (393,127 – 434,509)	61,514	17.46
2015	68,770	104,214	41,398	13,908	292	232,031	449,563 (427,085 – 472,041)	35,745	8.64
2020	74,439	111,723	44,381	15,015	312	249,142	483,149 (458,992 – 507,306)	33,586	7.47
2025	79,683	119,307	47,394	16,079	331	266,239	516,355 (490,537 – 542,173)	33,207	6.87
2030	84,286	126,410	50,215	17,076	348	282,251	547,147 (519,790 – 574,504)	30,791	5.96

1: Dispersed use includes use not associated with developed recreation sites at Indian Valley, as well as all use at Cedar Roughs, Geysers, Berryessa SRMA, and most scattered tracts (none of which have developed recreation sites). Dispersed used at the other management areas is included in the values shown for each area.

2: Range of visitor days is based on +/- 5% bracketing around the initial projection, which recognizes the limits of the accuracy of the projections.

Alternative D

Alternative D proposes to introduce an ROS allocation of Ukiah Field Office-administered lands that differs from Alternative B and Alternative C at half the management areas, with more Frontcountry and less Middlecountry zoning at three areas. At Cache Creek in particular, the area allocated to Frontcountry zoning increases to 32 percent while Middlecountry zoning decreases to nine percent. At South Cow Mountain, about 7,400 acres are reallocated from Middlecountry to Frontcountry zoning with the result that the area allocated to Frontcountry zoning increases from 64 to 94 percent while Middlecountry zoning decreases from 33 to four percent. At North Cow Mountain, about 10 percent of the area (2,500 acres) switches from Middlecountry to Frontcountry zoning.

At two areas, the change is reversed with more Middlecountry and less Frontcountry zoning. At Indian Valley about 5,100 acres are reallocated from Frontcountry primarily to Middlecountry zoning, and also to Rural zoning. At Knoxville, over 7,600 acres are reallocated from Frontcountry to Middlecountry zoning. Overall, Alternative D (like Alternatives B and C) allocates the greatest portion of land to Frontcountry zoning (44 percent), while Middlecountry zoning falls to about 28 percent of the total. Backcountry zoning is unchanged from Alternative C, comprising about 25 percent of the total. Rural zoning increases only slightly to three percent of all lands.

The following assumptions derived from management actions proposed under Alternative D were used in developing use projections:

- A comprehensive use allocation system would be developed for all management areas within five years; however, restrictions on use are not assumed to be necessary and would occur only if unacceptable deterioration in resource and/or social conditions were documented and warranted. Therefore no effects on use levels area assumed.
- Establishment of nominal fees for overnight and day use is assumed to have moderate negative effects on use levels at all management areas.
- Special use permits would continue to be issued for annual competive motorcycle events at South Cow Mountain and commercial whitewater rafting operations at Cache Creek SRMA; applications for similar permits would be accepted where appropriate and in keeping with management plans. Effects of these actions on use levels is assumed to be minor.
- Like Alternative C, facility development would focus on development of trailheads and trails at several management areas, as well as improvement or expansion of primitive camping facilities at Cow Mountain, Indian Valley, and Cache Creek. In addition, under Alternative D new trailheads would be provided in currently unserved areas of North Cow Mountain, Cache Creek, Cedar Roughs, and new or expaned developed camping facilities would be provided at most management areas. A moderate increase in visits to these areas is assumed.
- Acquistion of vehicular access at Berryessa and Geysers would provide public access into areas where access was minimal or non-existent; it is assumed these actions would result in a moderate increase use of those areas from current negligible levels.
- Development of non-motorized trails, with benches and a bridge, and trailheads at Stornetta where none has previously existed and improved trailheads and a new trailhead and possible new trails at Cedar Roughs would increase use of those areas. Visits to Cedar Roughs is assumed to

increase moderately from current neglible levels. Due to its prime coastal location and highway access, visits to Stornetta are assumed to increase substantially from current low levels.

- Minor removal of problem trails at Cow Mountain and Knoxville is assumed to have minimal effects on use levels. Creation of a new non-motorized trail at North Cow Mountain and Knoxvillw, re-opening of an old non-motorized trail at South Cow Mountain, and development of a walking tour at a new Perkins Creek trailhead at Cache Creek as assumed to have moderate impacts on use levels at those areas.
- Acquisition of legal vehicle access to Berryessa, expansion of vehicle access at Geysers from seasonal to year round access and development of a more modern trailhead, and development of vehicle access to Black Forest and other scattered tracts is assumed to have minor effects on use levels.
- Management of the entire Knoxville area (24,346 acres) as an ACEC would have a major effect on recreation use levels by restricting OHV trail development and OHV use.
- Management of 8,784 acres at Indian Valley as an ACEC would have a minor effect on recreation use levels by restricting OHV use on 20 miles of existing roads.

Table 4-9: Recreation Use Projections-Alternative D (Visitor Days)

YEAR	MANAGEMENT AREA						TOTAL (RANGE OF VISITOR DAYS)[2]	GROWTH IN VISITOR DAYS	% GROWTH
	CACHE CREEK	COW MTN	KNOXVILLE	INDIAN VALLEY	LITTLE DARBY	DISPERSED USE [1]			
2005	52,671	73,439	29,173	10,438	245	186,338	352,304	Base	Base
2010	74,501	104,103	39,764	11,556	269	223,701	435,290	82,986	23.56
2015	80,642	112,898	43,123	12,644	292	243,080	472,477	37,187	8.54
2020	86,324	121,033	46,230	13,650	312	261,005	506,875	34,398	7.28
2025	91,310	129,250	49,369	14,618	331	278,917	540,630	33,755	6.66
2030	95,980	136,944	52,308	15,524	348	295,692	572,243	31,613	5.85

1: Dispersed use includes use not associated with developed recreation sites at Indian Valley, as well as all use at Cedar Roughs, Geysers, Berryessa SRMA, and most scattered tracts (none of which have developed recreation sites). Dispersed used at the other management areas is included in the values shown for each area.

2: Range of visitor days is based on +/- 5% bracketing around the initial projection, which recognizes the limits of the accuracy of the projections.

4.14.14.3 Comparison of Impacts of Recreation Management by Management Area

In addition to effects on use levels, the recreation management prescriptions called for under each alternative are likely to have effects on recreation activity and enjoyment. The following section describes changes in ROS zoning for each management area across the three action alternatives and the effects of changes in management prescriptions for each management area, which are in part associated with the ROS zoning differences. Changes in ROS zoning in and of themselves do not result in effects on recreation; rather, the changes in ROS zoning may effect the recreation activities that are allowed on an area, the level of management presence, facility development, and whether and what type of restrictions on use levels may be imposed, and other aspects of management. All of these may have beneficial or adverse affects on various types of recreation visitors.

Subsequent sections describe changes in visitor use management, facility development, trails, signage, and monitoring across alternatives and the likely impacts of those changes on recreation.

ROS Zoning

Cow Mountain

ROS zoning of the approximately 50,000 acre Cow Mountain area is the same for Alternatives B and C. In both alternatives, about half the area is zoned as Frontcountry, about one-third is zoned as Middlecountry, about 16 percent of the area is zoned Backcountry, and less than 1 percent is zoned Rural. ROS zoning for Alternative D converts about 10,000 acres at Cow Mountain from Middlecountry to Frontcountry zoning, decreasing Middlecountry to 15 percent and increasing Frontcountry to 69 percent of the area. Backcountry and Rural zoning does not change from Alternatives B and C. Under all alternatives, Rural zoning would be applied to an area to the west of Blue Lakes and adjacent to the current management area but not currently in public ownership, if those lands were acquired.

Knoxville

Under both Alternative B and Alternative C, about slightly more than two-thirds of the Knoxville area is zoned Frontcountry and just less than one-third is zoned Middlecountry. Alternative D roughly reverses that zoning with 36 percent of the area zoned as Frontcountry and 64 percent zoned as Middlecountry.

Indian Valley

Under both Alternative B and Alternative C, about 60 percent of the Indian Valley area is zoned Middlecountry and about 40 percent is zoned Frontcountry. Alternative D reduces the area zoned as Frontcountry by about 10 percent, converting most of that 10 percent to Middlecountry and a small amount (four percent) to Rural zoning.

Cache Creek

Among all of the management areas, Cache Creek is the subject of the most variation in ROS zoning between alternatives. Under Alternative B, a large core block comprising more than half of the Cache Creek area is zoned as Primitive and about 20 percent of the area is zoned as Frontcountry. Middlecountry and Backcountry zoning total about 10 percent each. Under Alternative C, there is no Primitive zoning and most of the area zoned Primitive in Alternative B is zoned Backcountry instead. Middlecountry zoning increases to about 24 percent while Frontcountry zoning remains about the same as under Alternative B. Alternative D retains the changes in Primitive and Backcountry zoning of Alternative C, but reduces Middlecountry zoning back to the 10 percent proposed under Alternative B while increasing Frontcountry zoning to nearly one-third of the area. Under all alternatives, Rural and Urban zoning would be applied to areas some adjacent to the current management area but not currently in public ownership, if those lands were acquired.

Cedar Roughs

ROS zoning of Cedar Roughs is unchanged across the three alternatives, with nearly 70 percent of the area zoned as Backcountry and just over 30 percent zoned as Frontcountry.

Berryessa

ROS zoning of Berryessa is unchanged across the three alternatives, with the entire area zoned as Frontcountry in each case.

Stornetta

ROS zoning of Stornetta is unchanged across the three alternatives, with nearly 80 percent of the area zoned as Frontcountry and just over 20 percent zoned as Middlecountry.

Geysers

Under all alternatives, nearly two-thirds of the Geysers is zoned Rural, with the remaining area zoned as Middlecountry.

Black Forest

ROS zoning of the Black Forest area is unchanged across the three alternatives, with the entire area zoned as Frontcountry.

Visitor Use Management

Alternative A would continue current visitor use management practices with no use allocation limits on visitation. Applications for special use permits would continue to be accepted and reviewed on a case-by-case basis. Permits would continue to be issued, if applications similar to those submitted in past years continue to be submitted, for competitive organized OHV events at South Cow Mountain and commercial whitewater rafting at Cache Creek.

Motorized use (OHV use) would continue to be allowed on designated trails and certain unpaved roads and routes at North and South Cow Mountain, Knoxville, Cache Creek, Indian Valley, and Geysers. Motorized use would not be allowed in the Backcountry Zones of these areas, or on the Middlecountry Zone of Geysers. These uses would also continue to be allowed at Berryessa, Cedar Roughs Frontcountry Zones, and the scattered tracts, although access is generally available only to adjacent land owners. Motorized use would continue to be prohibited at Stornetta. Mechanized use (including use of mountain bikes on trails) would continue to be allowed in all areas except the backcountry portions of South Cow Mountain and Cedar Roughs and at Stornetta. Similarly, non-hunting shooting of firearms would continue to be allowed in all areas except the backcountry portions of South Cow Mountain and Cedar Roughs and at Stornetta and Cache Creek. Non-traditional and newly emerging recreation uses would be allowed as long as they are consistent with the zone management goals as specified under the ROS zone management prescriptions.

These actions related to use allocation, special use permits, and allowable uses under Alternative A would have a long-term beneficial impact on recreation in that they would impose minimal constraints on recreation use, would allow most uses in most areas, and would impose no new restrictions. However, this impact is based in the assumption that use levels would remain below levels that would strain the physical or social capacity of facilities such as staging areas, campgrounds, and trails and the lands of the management area, and that conflicts do not develop between mechanized or motorized users and non-mechanized and non-motorized user groups. If problems related to overuse or conflicts between users

begin to appear as a result of increased use levels, the lack of use allocation limits on visitation can have a long-term minor to moderate adverse impact on recreation.

Alternative B would restrict use to personal use only and no group or other special use permits would be issued. This would have a long-term moderate impact on recreation due to the cessation of OHV events that draw many visitors to the South Cow Mountain area, both as participants and as spectators, and the loss of commercial rafting services at Cache Creek.

Alternative B would reduce where motorized use would be allowed at several management areas, limiting these uses to Rural Zones at North Cow Mountain and Indian Valley, and prohibiting these uses at Cache Creek, Cedar Roughs, Berryessa, and scattered tracts (motorized use would be allowed on possible future rural and Urban Zone acquisitions at Cache Creek). Mechanized use would also be substantially restricted under Alternative B, with these uses allowed only in Rural Zones at North Cow Mountain, Indian Valley, and Geysers and prohibited at Cedar Roughs, Berryessa, and scattered tracts. Mechanized use would also be prohibited in a large central Primitive Zone (overlapping the existing Wilderness Study Area) at Cache Creek. Similarly, non-hunting shooting of firearms would be more restricted, with these activities allowed in Middlecountry and Rural Zones at Indian Valley and Rural Zones at North Cow Mountain, and prohibited at South Cow Mountain, Geysers, and scattered tracts. Alternative B would allow only traditional non-motorized uses and would not allow non-traditional and newly emerging recreation uses.

These actions related to allowable uses under Alternative B would have a long-term moderate adverse impact on recreation in that they would impose substantial constraints on recreation use in most management areas. Off-road vehicle use, the most popular of the restricted activities, would not be subject to new restrictions at the two areas managed primarily for this use, South Cow Mountain and Knoxville, therefore impacts to that user group are minor.

Alternatives C and D would develop a comprehensive visitor use allocation plan for all management areas within five years of completion of the RMP. This would have a beneficial impact on recreation if use levels increased to the point that redistribution of use or use limits were needed. Alternatives C and D would also accept applications for special recreation use permits if the proposed activity is consistent with management prescriptions for the ROS zone. Applications for allowable activities would be evaluated on a case-by-case basis.

Alternatives C and D would impose few new restrictions on motorized use. No new restrictions would be implemented at the two areas primarily managed for OHV use, South Cow Mountain and Knoxville. Also, limited motorized use would continue at non-backcountry portions of North Cow Mountain and Cache Creek, Rural Zones at Geysers, and some scattered tracts. Motorized use would continue to be prohibited at Stornetta and would also be prohibited at Cedar Roughs and Berryessa. Mechanized use would be allowed in all ROS zones of all management areas, with the exception of the backcountry portion of Cedar Roughs. Alternative C would restrict non-hunting shooting of firearms less than Alternative B at some areas, with these activities allowed in designated areas at North and South Cow Mountain, and in Middlecountry Zones at Geysers. These activities would continue to be allowed at all ROS zones at Knoxville, Indian Valley, and Berryessa, and would continue to be prohibited at Cache Creek and Stornetta. Alternative D would restrict non-hunting shooting similarly to Alternative C, but with additional Middlecountry Zones open to these activities at North Cow Mountain, and all portions of

Geysers and scattered tracts would continue to be open to these activities. Additional Middlecountry portions of South Cow Mountain would be closed to shooting.

These actions related to allowable uses under Alternatives C and D would have a long-term moderate beneficial impact on recreation in that they would impose few constraints on recreation use in most management areas. Off-road vehicle use, the most popular of the restricted activities, would be allowed on at least a portion of most management areas and would not be subject to new restrictions at the two areas managed primarily for this use, South Cow Mountain and Knoxville, therefore impacts to that user group are minor. Similarly, shooting would be allowed on at least a portion of most management areas and mechanized use would be allowed almost everywhere, therefore impacts to those user groups are negligible. However, these assessments of impacts are based in the assumption that conflicts do not develop between mechanized or motorized users and non-mechanized and non-motorized user groups, or between shooters and other visitors. If problems related to conflicts between users begin to appear, the lack of constraints on where certain uses are allowed can have a long-term minor to moderate adverse impact on recreation.

Non-traditional and newly emerging recreation uses would be allowed under Alternative C as long as they are consistent with the zone management goals as specified under the ROS zone management prescriptions. These actions would have a minor beneficial impact by allowing a wide range of uses and special permitted uses. Alternative D would allow <u>all</u> non-traditional and newly emerging recreational uses, which could have minor to moderate adverse impact on recreation if such uses lead to user conflicts, safety issues, or resource impacts.

Regarding visitor fees, Alternative B would charge fees only in high use areas within Rural Zones. This would have negligible impacts on recreation because few management areas contain Rural Zones or have high use areas within those zones. Alternative C proposes potential nominal fees for overnight use only in all management areas and all ROS zones. This would have minor adverse impacts on recreation in that overnight use does not occur at some sites and is a minor component of use at all others. Also, camping fees are charged at many similar facilities on non-BLM lands; therefore, although this would be a change for users of Ukiah Field Office areas and some users might stop overnight use due to the fees, most users would probably accept and adapt to the fees. Alternative D proposed establishment of nominal fees for both overnight and day use in all management areas and all ROS zones. This would have a moderate adverse impact on recreation in that all users would be affected, and fees would be charged for use of day use facilities such as trailheads and trails whereas few other areas in the region charge for such uses. It is likely that a certain percentage of current visitors would be displaced and would cease visiting Ukiah Field Office lands, and low-income visitors could be disproportionately affected. A moderate long-term positive impact could also occur if the additional funds obtain through the new fees were used to enhance facilities, maintenance, patrol, and BLM presence on the lands.

Facility Development

Each of the four alternatives would allow for a different level of facility development. Alternative A would maintain existing facilities at current levels, with no new facilities. Since visitation would continue to increase under Alternative A, use of the existing facilities would also increase and visitor use could exceed the facilities' designed carrying capacity.

Current use of campgrounds is only a small percentage of capacity, even if the current use is assumed to occur mostly or entirely during a six-month period between fall and spring when climatic conditions are best. Therefore, it does not appear that those facilities will reach their design capacity during the planning period (ending in 2030). The same situation of appears to be true for the trailhead and staging area facilities at North and South Cow Mountain. Although estimated use levels at the South OHV staging area are currently over 21,000 visits per year, the short duration of visits and rapid turnover of parking spaces appears to leave ample excess capacity to absorb expected increased use. Use of the other Cow Mountain trailheads and staging areas is much lower than the South OHV Staging Area, and it does not appear that capacity would be approached with expected increases in use. Also, a majority of use at Cow Mountain is dispersed use, and visitors can park or stage for trail use at many undeveloped locations.

The major trailheads at Cache Creek are currently used at a level closer to their capacity, particularly the North Fork Trailhead, which provides access to the popular Redbud Trail. These facilities are more likely to reach there design capacity during the planning period, and may reach capacity during some current peak use periods. Some use currently occurring at the Judge Davis trailhead may be redirected to the nearby Cowboy Camp trailhead when it opens in 2005. In sum, then, maintaining current facility development under Alternative A would have minor long-term adverse impacts on recreation due to capacity constraints that are likely to develop at some trailhead and staging area facilities.

Alternative B would also provide no new recreation facilities. In addition, Alternative B would remove the BLM-maintained campsites in the Primitive Zone at North Cow Mountain (i.e., the Goat Rock campground), which are reachable only by trail. As under Alternative A, these actions would have minor long-term adverse impacts on recreation due to capacity constraints that are likely to develop at some trailhead and staging area facilities. In addition, the low number of equestrians and hikers who use the Goat Rock sites would be adversely affected by the removal of the facilities, although primitive camping would continue to be allowed in the backcountry of North Cow Mountain.

Alternative C would provide some additional facilities, and redevelop some existing facilities, with the intent to provide a minimal level of development to meet the needs of visitors, to protect resources, and to promote visitor safety and knowledge of the management areas. The primary goal of facilities would be to provide adequate basic staging areas and access corridors. Potential facilities actions, based on future need, would include redeveloped and expanded campgrounds, shooting range, and trailhead/staging area facilities and new trailheads, day use facilities, and primitive campsites at Cow Mountain; improved trailhead/staging area facilities at Knoxville; new trailheads at Indian Valley; expanded trail access and trailheads for hikers and equestrians, and new minimal camping facilities, at Cache Creek; and new parking and trailhead facilities at Cedar Roughs, Berryessa, Stornetta, Geysers, and some scattered tracts. These facility developments would have long-term moderate beneficial impacts by improving and expanding access to many of the Ukiah Field Office lands, increasing primitive camping opportunities, and preventing potential trailhead over-crowding and capacity constraints from limiting access to trails.

Alternative D would also provide some additional and redeveloped facilities, with the intent to provide a minimal level of development to meet the needs of visitors, to protect resources, and to promote visitor safety and knowledge of the management areas. As under Alternative C, the primary goal of facilities would be to provide adequate basic staging areas and access corridors. However, in addition to the

potential facilities described above under Alternative C, facilities proposed under Alternative D include a full-service campground and additional trailhead at North Cow Mountain (and a viewing point for motorists on Highway 20 that passes to the northeast of the area); additional primitive camping amenities at South Cow Mountain; an additional trailhead and assessment of relocation of the shooting area at Knoxville; more-developed trailhead facilities and basic camping facilities at Indian Valley; additional camping, park, and a wheelchair accessible overlook at Cache Creek (these would be on potential future rural and Urban Zone acquisitions); and more-developed trailhead facilities combined with camping facilities at Cedar Roughs, Geysers, and some scattered tracts. These facility developments would have long-term moderate beneficial impacts by improving and expanding access to many of the Ukiah Field Office lands, increasing primitive and developed camping opportunities, and preventing potential trailhead over-crowding and capacity constraints from limiting access to trails. The greater level of development and introduction of more developed trailheads and camping to areas that currently are minimally developed with no camping facilities and low use levels could have long-term adverse impacts on recreationists who prefer less-developed conditions and greater levels of solitude.

Trails

Alternative A would provide no new non-motorized or motorized trails in any of the management areas. Although trail use is expected with increase with overall use at all management areas during the planning period, trail use is not expected to approach capacity limits at any areas. The two most visited management areas, Cache Creek and Cow Mountain, provide expansive networks of trails, with ample capacity remaining for additional use. Therefore, maintaining trail development at current levels under Alternative A would have negligible to minor adverse impacts on recreation. Not closing some trails or old fire breaks and unmaintained roads where routing, topography, or poor design is causing erosion problems or poses safety problems would have minor impacts on recreation given the limited number and use of those routes and the high number of alternatives routes available.

Alternative B would also provide no new trails at most areas. Exceptions include development of new trails at Indian Valley on the east side of the Indian Valley Reservoir, and development of minimal trails at Stornetta, where none currently exist. OHV trails would be closed in much of the Knoxville area, and routes would be closed in parts of Indian Valley and the scattered tracts. Fire breaks and unmaintained roads used by some non-motorized and motorized users at North Cow Mountain would also be closed. Overall, the limited amount of trail development proposed under Alternative B would have a minor long-term beneficial impact, although the impact may be more substantial at Stornetta where hikers are currently required to walk cross-country. The trail and route closures proposed under Alternative B would have moderate to major adverse impacts at Knoxville, depending on what trails remain open and the extent of the remaining trail network. Other trail and route closures would have minor adverse impacts given that use of these routes is low and tends to be seasonal (e.g., during hunting season only).

Alternative C would provide new trails at most management areas and re-routing of existing trails where resource damage, maintenance, or trespass problems have occurred. Trail development at North Cow Mountain would include trails crossing and connecting to adjacent non-BLM lands to allow access to and from the nearby Blue Lakes and Lake Mendocino areas. Trail development at South Cow Mountain would include a non-motorized nature trail in the Lost Valley area. Trail development at Knoxville would focus on creating a loop trail system and eliminating dead-end trails. Development of loop trails would also occur at Cache Creek, as well as a bridge of Cache Creek itself, and potential wheelchair

accessible and other trails in potential rural and Urban Zones acquisitions. Frontcountry portions of Cedar Roughs would receive trails connecting the parcels to non-BLM lands close to Lake Berryessa. Berryessa would receive an extension of the Blue Ridge trail to connect with existing portions at Cache Creek. Trail development at Stornetta would include a loop trail network, a new segment of the California Coastal Trail, trails connecting parking facilities to the shore, and trail amenities such as benches and a bridge over the Garcia River. In aggregate, these trail improvement would have moderate to major beneficial impacts on recreation, particularly where no trails now exist and where existing trail systems are poorly designed.

Alternative D would provide all of the trail improvements outlined above under Alternative C, and a few additional non-motorized trails at North and South Cow Mountain, Knoxville, and on potential Urban Zone acquisitions at Cache Creek. In aggregate, these trail improvement would have moderate to major beneficial impacts on recreation, particularly where no trails now exist and where existing trail systems are poorly designed.

Signage and Interpretation

All alternatives would maintain existing signs and interpretive information, as required, to provide for visitor safety and resource protection. Under Alternative A, no additional signage or interpretive materials would be installed. This would have a no impact on recreation, given that no additional facility or trail development would occur, such that current signage should be adequate if maintained in the future. Alternative B would provide minimal additional signage, with the focus on areas where some signage needs have been identified such as Knoxville and Indian Valley. In particular, signage would be required to post closure areas and inform visitors of expansion of areas closed to mechanized and motorized use. This would have minor beneficial impact on recreation by increasing opportunities for visitors to become informed about use restrictions, regulations, and other topics.

Alternatives C and D would provide informational kiosks at many of the management areas in conjunction with trailhead improvement and new trailheads. Alternatives C and D would also provide maps of the non-motorized and motorized trails at each of the management areas for public distribution. Trail maps would most likely contain additional information about area features and regulations. These enhancements in the information available to visitors would have a minor beneficial impact on recreation, particularly the development of trail maps, which are currently available only for North and Cow Mountain.

Monitoring

Alternatives A, C and D would continue monitoring of visitor use, resource conditions, and resource impacts resulting from visitor use performed by BLM Law Enforcement rangers and other staff specialists. Visitor use statistics would continue to be collected using traffic counters, patrol logs, and contact with visitors. Some monitoring of impacts of recreational use on natural and cultural resources would occur through the use of photographic documentation and photo points. These actions would have no impacts on recreation as they are a part of normal recreation management and oversight.

Alternative B would eliminate most monitoring, with only minimal monitoring continuing at Knoxville, Indian Valley, and Stornetta. This action would, indirectly, have minor to moderate adverse impacts on

recreation is facility or resource degradation increases in the absence of regular monitoring such that visitor enjoyment is effected or facility or area closures become necessary.

4.14.15 Impacts on Recreation Resources from Interpretation and Education

Continuing to provide the existing interpretive opportunities, facilities, and information would continue to benefit recreation by educating users and providing information and facilities that enhance the recreational experience at Ukiah Field Office lands. Alternative A would maintain the existing scheduled programs, off-site presentation, website and availability of additional programs/presentations "as-requested." This would continue to benefit recreation by educating users and providing information that enhances the recreational experience. Alternative B would maintain existing outreach efforts and add a minimal level of interpretive facilities such as signs, exhibits, waysides, kiosks, and brochure distribution boxes as funds allow. This would have a long-term negligible impact on recreation. Alternative C (Preferred Alternative) would add slightly more interpretive facilities based on identified needs with the option of providing detached visitor centers if a need for such facilities is identified. Under Alternative C, the BLM would increase outreach efforts by assisting in local school curriculum development, promoting off-site programs and presentations, and adding interpretive presentations to the website. All of the interpretive management actions under Alternative C could have a moderate to major long-term beneficial impact on recreation depending primarily on the facilities added. Alternative D would provide the highest level of additional facilities including facilities at all primary entry portals, wayside panels in Middlecountry Zones, and Visitor Information Centers at Stornetta and Cache Creek. Outreach activities would also be the highest in this alternative with year-round hikes provided, presentations provided at county fairs and recreational trade shows, local school curriculum developments, promotion of off-site programs and presentation, and a fully interactive website which includes interpretive presentations. All of the interpretive management actions under Alternative D could have a long-term major beneficial impact on recreation.

4.14.16 Impacts on Recreation Resources from Soil Resources

Management actions regarding road design and construction, assessing a proposed project for soil considerations, and maintaining the integrity of serpentine soils in Cedar Roughs would not impact recreation. Trail building guidelines would have long-term beneficial impacts by creating better trails that require less maintenance. The NOA management actions have potential health benefits for recreationists by giving them the knowledge and choice to avoid areas with NOA if they so choose. Under all four alternatives, Berryessa would continue current management of soil resources.

4.14.16.1 Cow Mountain

Under Alternatives A and B, construction and re-routing of trails would continue as identified. Comparatively, Alternatives C (Preferred Alternative) and D would alter trails to decrease sediment production. Alternative C would prioritize roads and trails for analysis and appropriate mitigation as well as redesign appropriate trails and Alternative D would re-route all trails and roads or build crossing structures. All alternatives could have long-term minor beneficial impacts on recreation by providing better trails that require less maintenance, however, there could be short-term negative negligible to minor impacts on recreation if trail use has to be suspended during redesign, mitigation activities, or re-routing depending on the popularity of the trail and timing of activities. Further refining of the rain closure policy could have positive or negative impacts on recreation depending on if the metric decided

upon allows more or less days of use. Additionally in Alternative D, the east end of Mendo-Lake Road would be decommissioned and a new road provided which could have a temporary negative negligible impact on recreation if access to facilities is temporarily suspended due to construction activities. Use of erosion control road building methods in Alternative D would not impact recreation.

4.14.16.2 Knoxville

Alternatives A and B would not allow new roads or trails to be built or re-routed and would not impact recreation. Comparatively, Alternatives C (Preferred Alternative) and D would alter trails to decrease sediment production. Alternative C would evaluate all trails and roads for sediment production and develop projects to minimize soil loss and erosion, whereas Alternative D would re-route all trails or build stream crossings structures to decrease sediment production. Either alternative could have long-term minor beneficial impacts on recreation from providing better trails that require less maintenance though short-term negative negligible impacts could occur if trail use has to be suspended during implementation of projects, re-routing, or crossing construction.

4.14.16.3 Indian Valley

Alternatives A and B would continue current soil resource management and would not impact recreation. Alternative C (Preferred Alternative) includes sediment production mitigation measures that could have long-term minor beneficial impacts on recreation from providing better trails that require less maintenance though short-term negative negligible impacts could occur if trail use has to be suspended during implementation of mitigation measures. Development of methyl mercury assessments and recovery plan in Alternative C would not impact recreation. Alternative C would close and rehabilitate undesignated routes whereas Alternative D would only close road and trails near mine sites. Closing routes under Alternative C would have a negligible beneficial impact by keeping visitors on designated routes. Closing roads and trails near mine sites would also have a long-term minor beneficial impact by reducing opportunities for recreationists to use potentially hazardous areas.

4.14.16.4 Cache Creek

Alternatives A and B would continue current soil resource management and would not impact recreation. Comparatively, Alternatives C (Preferred Alternative) and D would consider closing some trails and roads. Alternative C would evaluate existing roads and trails and close those that do not contribute to a sustainable, manageable trail system. Alternative D would only decommission and rehabilitate roads and trails that do not contribute to administrative or emergency services access. Both Alternatives C and D would have negative impacts on recreation due to elimination of trail use opportunities; however, the level of impact would depend on the extent of closures.

4.14.16.5 Cedar Roughs

Alternatives A, B, and D would continue current soil resource management and would not impact recreation. Closure of the abandoned jeep trails in Alternative C (Preferred Alternative) would have a long-term negative impact for adjacent landowners that use these trails. Level of impact would depend on how much they use these trails. Mitigating or re-routing the trail would have short-term negligible impacts if recreation use were temporarily suspended to implement management activities. Analyzing erosion management practices and riparian monitoring under Alternative C would not impact recreation.

4.14.16.6 Stornetta

Alternatives A and B would continue current soil resource management and would not impact recreation. Alternative C (Preferred Alternative) would monitor public activities and based on results could lead to changes in allowable uses or mitigation projects. Impacts to recreation from changes in allowable uses or mitigation projects would depend on location, amount of use, duration of project, and change in use. Discontinuing a certain recreational use could have a moderate impact on recreation if it was a high use activity, whereas short-term negative negligible impacts could result if recreational use or access is only temporarily suspended for implementation of a mitigation project. Alternative D would permanently close riparian zones to equestrian use, which could have an overall negative long-term minor impact on recreation due to less area for equestrian use. For those equestrians that use the area the impact could be minor to moderate due to less riding area available and partitioning of available lands. Alternative C would construct fencing around sinkholes and blowholes which would have a long-term beneficial negligible impact on recreation from increased visitor safety. As for fencing for grazing, temporary grazing fencing would be required in Alternative C whereas Alternative D would construct permanent fencing around standing water, both which would not impact recreation. Additional actions in Alternative C to monitor changes in geology and affects of geological activity would not impact recreation.

4.14.16.7 Geysers

At this management area Alternatives A and B would not allow new roads or trails to be built or re-routed, Alternative D would continue current management of soil resources, and Alternative C (Preferred Alternative) would identify and quantify sediment production, evaluate current facilities and proposed power plants for sediment production and possible implementation of mitigation measures. None of the alternatives would impact recreation.

4.14.16.8 Scattered Tracts

Alternatives A, B and D would continue current management of soil resources with management of Black Forest done on a project-by-project basis. Alternative C (Preferred Alternative) would continue current management of all Scattered Tracts except Black Forest. At this area actions to collect baseline soil data would not impact recreation. Alternative C would also use data gathered on existing roads and trails in future determinations of roads to decommission due to erosion. Future road decommissioning and rehabilitation could have negative impacts on recreation due to decreased access. The level of impact would depend on what the road provided access to, amount of use the road received, and the recreation opportunities lost because of decreased access.

4.14.17 Impacts on Recreation Resources from Water Resources

Under all four alternatives (Alternative C is the Preferred Alternative for all management areas), management actions regarding livestock grazing and prioritization of water projects would not impact recreation.

4.14.17.1 Common to All Management Areas

The following discusses the overarching management philosophy behind each alternative and the impacts that could have on recreation. Any specific management actions are discussed under the appropriate management area.

Under Alternative A, management would let natural processes take place, but if field monitoring identified concerns then collaboration with other agencies would ensue to identify the appropriate management response. Any management intervention/projects could have short-term impacts on recreation if recreational use or access is temporarily suspended for management activities. Unlike Alternative A, Alternative B would not allow management intervention but would allow waterways to establish equilibrium on their own, which would not impact recreation. Alternatives C and D would encourage more management of water resources than Alternatives A and B in an aim to reduce sediment loads and stabilize water temperature. Management actions would include collecting baseline data, continuing to collaborate with other entities, and mitigate for methylmercury where appropriate. These actions would not impact recreation. However, mitigation projects or changes to land uses to reduce water quality degradation would also occur under Alternatives C and D and impacts to recreation would depend on location, amount of use, duration of project, and change in use. Discontinuing a certain recreational use could have a moderate impact on recreation if it was a high use activity, whereas short-term negative negligible impacts could result if recreational use or access is only temporarily suspended for implementation of a mitigation project. Alternative D would also include management actions to collect quarterly water samples which would not impact recreation.

4.14.17.2 Cow Mountain

Under Alternative B, existing sediment catch ponds would be removed which could have short-term negative negligible impacts on recreation if recreational use or access has to be temporarily suspended for pond removal. Water bars and rolling dips on all roads and trails would also be removed which could have short-term negative minor to moderate impacts on recreation if recreational use or access has to be temporarily suspended for removal. Additionally, long-term negative impacts could occur due to trail erosion, decreased trail safety, and increased trail maintenance. Impacts would increase as trails degrade over time. The Eight Mile Valley Project would be completed under Alternative C and would not impact recreation. See Section 4.14.17.1 Common to All Management Areas for impacts from Alternatives A and D.

4.14.17.3 Indian Valley

Under Alternative B, existing sediment catch ponds would be removed which could have short-term negative negligible impacts on recreation if recreational use or access has to be temporarily suspended for pond removal. Water bars and rolling dips on all roads and trails would also be removed which could have short-term negative minor to moderate impacts on recreation if recreational use or access has to be temporarily suspended for removal. Additionally, long-term negative impacts could occur due to trail erosion, decreased trail safety, and increased trail maintenance. Impacts would increase as trails degrade over time. See Section 4.14.17.1 Common to All Management Areas for impacts from Alternatives A, C, and D.

4.14.17.4 Cache Creek

Under Alternatives C and D, management actions would include stabilizing headcuts and continued collaboration with other entities on water projects, neither of which would impact recreation. See Section 4.14.19.1 Common to All Management Areas for impacts from Alternatives A and B.

4.14.17.5 Geysers

Under Alternatives C and D, management actions would include establishing a scientific methodology to assess unique features in the area and continued collaboration with other entities on management activities, neither of which would impact recreation. See Section 4.14.17.1 Common to All Management Areas for impacts from Alternatives A and B.

4.14.18 Impacts on Recreation Resources from Air Quality

All alternatives (Alternative A is the Preferred Alternative for all management areas) include management actions to require burn plans, permits for stationary facilities, and participation in state and tribal smoke management programs. These actions would not impact recreation. Management actions requiring smoke management plans for all prescribed burning would minimize, to the extent possible, the impacts on recreation from prescribed burn smoke.

4.14.19 Potential Cumulative Impacts to Recreation Resources

The Ukiah Field Office is, and will continue to be through the life of the RMP, an important regional provider of a wide range of recreation settings and opportunities. This is particularly true related to undeveloped areas with low or dispersed use where visitors can most readily enjoy nature and relative solitude, and off-road vehicle recreation areas. Increasing population and other factors will result in continually rising demand for these and other types of outdoor recreation opportunities. Off-road vehicle recreation is in the midst of a multi-year boom.

Alternative A (no-action) would allow the Ukiah Field Office to continue to meet many recreation needs in the region, but would limit the potential for the management areas to meet increase and some unmet and new demands for recreation. Alternative B would constrain recreation access and uses in several management areas and would have the cumulative effect of reducing use levels while displacing some visitors to other non-BLM lands and increasing use pressures in those other areas. The other action alternatives would provide varying levels of expanded recreation facilities and opportunities with minimal new restrictions, which would have the cumulative effect of increasing and enhancing the role of the Ukiah Field Office in meeting regional outdoor recreation needs.

4.15 IMPACTS ON SOIL RESOURCES

Only a few management programs will have impacts on soil resources; all others not described can be assumed to have negligible or nonexistent impacts.

4.15.1 Impacts on Soil Resources from Vegetation Management

This section investigates impacts on soil resources from mechanical vegetation management. For impacts on soil resources related to vegetation management using grazing see Section 4.15.2 and for prescribed fire see Section 4.15.3. All of the mechanical vegetation management techniques employed in the various alternatives, including mowing, chaining, plowing, mastication and the use of pesticides, have the potential to cause surface disturbance and erosion. The impact of this disturbance, however, should in general be negligible and short-term.

Alternatives A and B policies to not allow noxious weed treatments at all management areas (except Cow Mountain and Cache Creek in Alternative A) would not impact soil resources. Use of pesticides at Cow Mountain and Cache Creek in Alternative A and any management area in Alternatives C (Preferred Alternative for all management areas) and D could have negligible short-term impacts on soil resources depending on the type of treatment, local soil characteristic, size of treatment area, and proximity to sensitive habitat areas or waterbodies.

4.15.1.1 Cow Mountain

Alternative A would continue mechanical mowing treatments and hand pulling, Alternative B would not use mechanical or pesticide treatments, and Alternatives C and D would use pesticide to treat several weed species. Hand pulling under Alternative A and lack of treatments in Alternative B would have no impact on soil resources. Mowing under Alternative A and pesticide use under Alternatives C and D could have localized short-term negligible impacts.

An ecosystem restoration project within Eightmile Valley area of South Cow Mountain is currently underway. This restoration will decrease erosion and sediment deposition within the Clear Lake watershed and increase native bunch grass populations. Project goals include restoring the vegetation on eroded slopes and implementing pilot restoration projects in order to improve slope stability and vegetative cover. This project will provide beneficial long-term impacts.

4.15.1.2 Knoxville

Alternatives C and D, which use pesticides to control several weed species on 50 acres, could have localized short-term negligible impacts.

4.15.1.3 Indian Valley

Alternatives C and D, which use pesticide to control several weed species on 20 acres, could have localized short-term negligible impacts.

4.15.1.4 Cache Creek

Alternative A would mechanically treat 20 acres, Alternative B would not use mechanical or pesticide treatments, and Alternatives C and D would use pesticide on 2,000 acres to treat several weed species. The lack of treatments in Alternative B would have no impact on soil resources. Mechanical treatments under Alternative A and pesticide use under Alternatives C and D could have localized short-term negligible impacts.

The Ukiah Field Office also plans to conduct a watershed study for the Bear Creek watershed. This study would analyze watershed restoration for water quality focusing on reducing erosion and sediment load. For all restoration or construction activities, the BLM will employ erosion control BMPs. These practices will reduce or eliminate incidental sediment discharge. Some of the BMPs include mulching, installation of sediment curtains, placement of hay bales and other drainage control features, construction of rolling dips, and seasonal limits on operations.

4.15.1.5 Cedar Roughs

Alternatives C and D, which use pesticides to control several weed species on 30 acres, could have localized short-term negligible impacts.

4.15.1.6 Berryessa

Alternatives C and D, which would utilize pesticides to control weed species if future populations are identified, could have localized short-term negligible impacts.

4.15.1.7 Stornetta

Alternatives C and D include an array of potential noxious weed treatments including plowing, moving, and pesticide use. Impacts experienced under Alternative D would be slightly greater than Alternative C as a larger area is proposed for treatment. Plowing may have minor short-term impacts while mowing and pesticide us may have negligible short-term impacts on soil resources.

4.15.1.8 Geysers

Alternatives C and D, which would utilize pesticides to control weed species if future populations are identified, could have localized short-term negligible impacts.

4.15.1.9 Scattered Tracts

Alternatives C and D, which use mowing, plowing, and pesticides to control weed species on up to 10 acres, annually, could have localized short-term negligible impacts.

4.15.2 Impacts on Soil Resources from Livestock Grazing Management

The presence of livestock on public lands has the potential to affect soil resources through the disturbance and displacement of soil. Under Alternatives A, B and C, the only new grazing allowed would be for weed eradication and/or maintenance of fire lines or prescribed burns. Impacts associated with these additional uses would be negligible as only a small percentage of those areas are suitable for grazing. Alternative D would allow grazing in the entire management area including recently burned areas. Since most wildfires would be in areas unsuitable for livestock grazing there would be limited additional disturbance resulting in negligible to minor long-term impacts on soil resources.

Impacts on soil resources from grazing would be proportional to the extent of the areas involved, the numbers of animal units allowed, landscape characteristics, management practices, and proximity to sensitive habitat areas or waterbodies.

4.15.2.1 Common to All Alternatives

All the alternatives would continue current management actions to minimize erosion and maintain or improve soil resources. Current management actions would include conformance to Northwestern California Standards for Rangeland Health and Guidelines for Livestock Management, which includes guidelines to meet soil resource objectives.

Under all alternatives, Stornetta would remain available for livestock grazing for 10 years resulting in negligible to minor long-term impacts on soil resources. However, the Hathaway Creek riparian area within Stornetta would not be available for livestock grazing resulting in a minor long-term beneficial impact.

Only the management areas which have grazing allotments or have the potential for using grazing as a tool are addressed below.

4.15.2.2 Cow Mountain

Under Alternative C, additional areas would become available for livestock grazing, thereby increasing impacts from surface disturbance and erosion resulting in negligible to minor long-term effects. Alternative D opens the entire area, including recently burned areas, to grazing. However, since most areas are unsuitable for livestock grazing because of steep terrain and/or lack of water there would be limited additional disturbance resulting in negligible to minor long-term impacts on soil resources. Alternative A (current situation) is the Preferred Alternative for Cow mountain.

4.15.2.3 Knoxville

Alternatives A and C (Preferred Alternative) would allow current leases to continue, and further allow grazing as a tool for weed control and/or maintenance of fuel loads. Alternative B would decrease grazing within Cement Creek and Jericho Valley allotments providing beneficial long-term effects on soil resources. Alternative D, which opens all of Knoxville to grazing, allows the most grazing allotments results in minor long-term impacts.

4.15.2.4 Indian Valley

Alternatives A and C (Preferred Alternative) would continue current management practices by allowing grazing on Salt Lick Canyon, while Alternative B would decrease grazing intensity within Salt Lick Canyon providing beneficial long-term effects on soil resources. Alternative D allows the most grazing allotments. However, most of these additional areas are not suitable for grazing due to steep terrain and/or lack of water therefore impacts would be negligible to minor and long-term.

4.15.2.5 Cedar Roughs

Alternatives A and C (Preferred Alternative) would continue current management practices by allowing grazing on Maxwell Creek, while Alternative B would decrease grazing intensity within Maxwell Creek providing beneficial long-term effects on soil resources. Alternative D opens all of Cedar Roughs to grazing thereby allowing the most grazing allotments. However, most of these additional areas are not

suitable for grazing due to steep terrain and/or lack of water therefore impacts would be negligible to minor and long-term.

4.15.2.6 Berryessa

Alternative A continues current management practices by allowing grazing on Rocky Ridge and Portuguese Canyon allotments, while Alternative B would decrease grazing intensity within both allotments providing beneficial long-term effects on soil resources. Alternative C (Preferred Alternative) would continue leasing within the Rocky Ridge allotment, while limiting grazing within the Portuguese Canyon allotment. This management scenario would have a slight beneficial long-term impact. Alternative D opens all of Berryessa to grazing thereby allowing the most grazing allotments. However, most of these additional areas are not suitable for grazing due to steep terrain and/or lack of water therefore impacts would be negligible to minor and long-term.

4.15.2.7 Stornetta

Alternatives A and B would only allow grazing as a tool for weed control and/or hazardous fuels reduction once the existing lease expired in 10 years. This will provide a beneficial long-term impact. Under Alternative B, a rangeland and environmental assessment would be completed to determine management plans for the area. Impacts would be assessed further within this document. Alternative D, which opens all of Stornetta to grazing, allows the most grazing allotments and therefore the greatest impact. Alternative C is the Preferred Alternative for the Stornetta management area.

4.15.2.8 Scattered Tracts

Alternative A continues current management practices by allowing grazing on Salt Creek and Ritcher allotments, while Alternative B would decrease impacts by limiting grazing upon relinquishment of the current leases or sale of the base property. Limiting grazing intensity would provide beneficial long-term effects on soil resources. Alternative C (Preferred Alternative) would continue current management practices while making Salt Creek available for disposal. Alternative D opens all of the Scattered Tracts to grazing thereby allowing the most grazing allotments. However, most of these additional areas are not suitable for grazing due to steep terrain and/or lack of water, therefore impacts would be negligible to minor and long-term.

4.15.3 Impacts on Soil Resources from Fire Management

While fire is a natural part of the landscape, forest fires can impact soil resources by damaging or combusting organic material and the litter layer. The loss of organic material by a particularly intense or slow-moving fire may lead to soil instability and erosion and in some cases, soil may begin to repel water which can dramatically increase the potential for soil erosion.

A FMP will be prepared which would incorporate policies and management actions resulting in a beneficial impact on soil resources. Wildfire suppression, fuels management, prescribed burning, rehabilitation, stabilization and restoration will have negligible impact on soil resources. However, the overall suppression of intense fires will have a moderate beneficial impact on soil resources.

Fire management actions include the use of non-fire treatments such as mechanical treatments. Alternatives A, C (Preferred Alternative for all management areas) and D utilize mechanical treatments for fire control and could have negligible to minor short-term impacts on soil stability depending on type of treatments, erosion control measures employed, and seasonality. Alternative B would not prescribe mechanical treatment for any management area and would therefore not have an impact on soil resources.

4.15.3.1 Common to All Alternatives

Wildfire suppression, prescribed burning and fuel management actions would have a negligible impact on soil resources. New fire breaks, though beneficial for public safety, could have negligible to minor impacts on soil resources depending on their size, proximity to sensitive habitat areas or waterbodies, and local landscape characteristics. Wildfire suppression efforts can also cause soil disturbance and erosion. The use of emergency stabilization and rehabilitation work is designed to mitigate damage that may occur during suppression efforts. The BLM and CDF will provide timely rehabilitation activities following wildfires where appropriate. Timely rehabilitation reduces the risk of long-term soil damage from surface erosion and landslides.

Under all alternatives, each management area would generally have differing goals for average annual acres of prescribed burns of which the decadal total could also relate to a single project within the ten year period or several projects. Prescribed burning at any management area could have negligible to minor short-term impacts on soil resources and soil stability, while over the long-term providing a beneficial impact.

Fire rehabilitation, stabilization, and restoration actions would have a minor long-term beneficial impact on soil resources by minimizing erosion potential. Management actions to educate the public regarding fire risk and prevention measures would have a long-term negligible beneficial impact on soil resources by increasing awareness and understanding of wildfire hazards.

4.15.4 Impacts on Soil Resources from Minerals

Minerals activities, such as locatable mineral exploration, entry and development, fluid mineral leasing, and mineral materials sales and disposals, increase the potential to cause surface disturbance through the use of construction, operation, and transport activities. Surface disturbance is directly related to soil displacement, erosion, and sedimentation. Activities such as dredging, drilling; road construction, and excavation may cause impacts ranging from minor to major over the short-term to long-term. During construction, disturbed soils would be exposed to the erosive forces of wind and rain. Erosion control measures would be required in order to protect on-site and downstream drainages and watercourses from major adverse impacts. A complete list of erosion control best management practices can be found in Appendix Q.

Under Alternative A, the planning area is generally available for locatable mineral entry, mineral materials sales, fluid mineral leasing, with the exception of fluid mineral leasing in Cache Creek. These allowable uses should result in long-term minor to major impacts. Under Alternative B, the planning area would be available for locatable mineral entry and development and mineral materials sales except existing withdrawals, while certain areas would be closed to locatable mineral exploration and development and

locatable mineral activities that require reclamation. These closures would provide additional long-term beneficial impacts, reducing impacts experienced under Alternative A. Under Alternatives C and D, the planning area would be available for locatable mineral entry and development, fluid mineral leasing, and mineral materials sales except existing withdrawals, while additional lands would be recommended for closure to locatable mineral exploration and development, mineral material disposal, locatable mineral activities that require reclamation, and fluid mineral leasing. Alternatives C and D provide the greatest long-term beneficial impacts, by further reducing impacts experienced under Alternative A.

According to the solid minerals RFD (see Appendix G), exploration for locatable minerals would include activities such as in-stream dredging with portable suction dredges; exploratory drilling; construction of new roads; use of explosives; and excavation of test pits. Locatable mineral exploration is expected to have a total surface disturbance of 105 acres. It is expected that one open-pit gold or silver mine using chemical heap leaching, at least in part, may be developed in the planning area. This development is expected to have a total surface disturbance of 715 acres within the planning area. Impacts associated with locatable mineral exploration and development is expected to be minor to major impacts and short-term to long-term effects depending on the size of development, type of operation, landscape characteristics, proximity to sensitive habitat areas or waterbodies, and construction methods and best management practices. Compliance with NEPA may reveal additional impacts.

Up to 5 mineral materials exploration projects are expected within the planning area. Approximately 1 project may be conducted for sand and gravel, 2 for rock aggregate (crushable or naturally broken material), and 2 for decorative rock. A typical sand and gravel exploration would disturb about 100 square feet per trench, or about 0.01 acre/project. A typical rock aggregate exploration project would disturb about 0.1 acre/project; total disturbance would be about 0.2 acre. A typical decorative rock exploration project would use no mechanized equipment and would be limited to surface sampling, essentially identical to a prospecting project; surface disturbance and therefore impact to soil resources would be negligible. Mineral materials exploration is expected to have a total surface disturbance of 0.3 acres. Impacts will range from negligible to moderate with localized and short-term effects.

It is expected that no new sand and gravel deposits with good quality material will be developed in the planning area. However, it is expected that 1 new deposit of good quality rock aggregate will be developed. A typical rock aggregate quarry would contain a pit, stockpile area, truck turnaround and loading area, and processing area (crusher, screener, washer, conveyor, asphalt plant, etc.). Surface disturbance would cover 4 acres per project. Rock aggregate deposits would require site-specific NEPA assessments. Impacts will range from minor to major with short-term to long-term effects depending on the size of development, type of operation, landscape characteristics, proximity to sensitive habitat areas or waterbodies, and construction methods and best management practices.

It is expected that 1 new collecting site for decorative materials would be developed. This site would be reached by existing roads. Extraction of the material would be by surface methods only, such as loading onto pickup or flatbed trucks or pallets, by hand or by rubber-tired front-end loaders. Surface disturbance resulting from these operations would be negligible. Site-specific NEPA assessments would be required prior to designation.

According to the oil and gas RFD (see Appendix F), it is projected that no more than three to five exploratory wells would be drilled with an expected surface disturbance of no more than 10 to 17 acres.

This estimate includes geophysical exploration (seismic), 5 exploration wells, 4 development wells and associated facilities, roads, and a gas transmission pipeline that could be linked to existing gas transmission lines within the area. The total surface disturbance caused by seismic operations, exploration drilling, and development would be 61 acres. Approximately 26 acres of this disturbance will be temporary with minor short-term impacts, and would be mostly to totally reclaimed. Impacts associated with development would be minor to major with short-term to long-term effects. However, over the long-term, both new and existing oil and gas related activities would eventually be abandoned, the lands would be reclaimed, and the sites would be restored to as near a natural condition as practical.

According to the geothermal RFD (see Appendix H), up to 50 new wells will be drilled on the 6,000 acres of new leases. The total surface disturbance caused by injection wells, access roads, and pipelines would be 220 acres. All wells will be permitted by BLM using standard review methods that ensure 1) protection of ground water, 2) protection of public safety, and 3) that the environment is not unduly damaged. Impacts will range from minor to moderate with short-term to long-term effects. It is anticipated that up to 4 new powerplants will be built to utilize the steam from the 6,000 acres of new leases. The total surface disturbance caused by powerplants, access roads, and transmission lines would be 162 acres. This surface disturbance will have minor to moderate impacts with long-term effects. There would be an additional 194 acres of temporary disturbance associated with the construction of the transmission lines. Temporary disturbance will have minor to moderate impacts with short-term effects.

4.15.4.1 Common to All Alternatives

For all alternatives, mineral material disposals are closed within WSAs. Therefore WSAs will not experience surface disturbance and soil displacement impacts associated with mineral material disposals.

4.15.4.2 Cache Creek

Alternative A will not allow any fluid mineral leasing within Cache Creek. Therefore this area would not experience impacts from surface disturbance and erosion associated with fluid leasing. Alternative B would allow locatable mineral entry and development and mineral materials sales except within existing withdrawals, while closing fluid mineral leasing within 34,000 acres of the Cache Creek WSA. The restriction of fluid mineral leasing in the WSA would minimize potential damage from surface disturbance and associated erosion in this sensitive area. Alternatives C and D would close the area to mineral material disposal, locatable mineral activities that require reclamation and fluid mineral leasing, thereby reducing impacts from these activities. However, allowing locatable mineral activities that do not require reclamation would result in short-term to long-term negligible to minor impacts.

4.15.4.3 Cedar Roughs

Alternative B would close fluid mineral leasing in 5,600 acres of Cedar Roughs WSA. This restriction would minimize impacts from surface disturbance and associated erosion. Alternatives C and D allow locatable mineral entry development and mineral material sales, while closing fluid leasing in 6,350 acres of Cedar Roughs. This area would not experience impacts from surface disturbance and erosion associated with fluid leasing. However, allowing locatable mineral exploration and development and mineral material sales and disposal would result in short-term to long-term minor to major impacts.

4.15.4.4 Scattered Tracts

Alternative B would close locatable mineral entry and development and mineral materials sales in 5,000 acres of the Cedars ACEC. This restriction would minimize impacts from surface disturbance and associated erosion. Alternatives C and D allow locatable mineral entry development and mineral material sales, while closing fluid leasing in 5,000 acres of Cedar ACEC. Therefore this area would not experience impacts from surface disturbance and erosion associated with fluid leasing. However, allowing locatable mineral exploration and development and mineral material sales and disposal would result in short-term to long-term minor to major impacts.

4.15.5 Impacts on Soil Resources from Travel Management and Route Designation

Travel management policies would continue to impact soil resources through surface disturbance and erosion. Additional roadways may be constructed within the management areas as is called for to one degree or another within all of the alternatives; it is the likely increased public access to that has the greatest potential to impact soil resources. Impacts from roadway expansion would depend on landscape characteristics, such as slope, soil properties, and vegetative community, number of visitors attracted, and nature of recreational uses. Closing and rehabilitating roads to protect resources could protect highly erosive or fragile soils from surface disturbance and increased erosion.

Travel management would not change under all four alternatives for Indian Valley management area. Impacts from changes to trails and OHV routes can be found in the previous section, Impacts on Soil Resources from Recreation Resources.

4.15.5.1 Cow Mountain

Under Alternative A, a 3.4 mile road within North Cow Mountain would be closed whereas Alternatives C and D would leave the road open and additionally would open the gate at the end of this road and allow public vehicle access to 5 other roads (13.86 miles total). Alternative C would allow public access to these 5 roads during the general deer season and Alternative D would allow year-round access. Closing the road in Alternative B would have long-term negligible beneficial impacts on soil resources because this is currently a dead-end road that does not provide access to anything. Comparatively, Alternative C would have a long-term negligible to minor impact on soil resources by increasing recreational use of the road. Alternative D would have a long-term negligible to minor impact by providing access to areas that are currently not available to recreation. Alternatives B, C and D would all rehabilitate some roads, particularly those where illegal dumping is occurring. Alternative B would rehabilitate 19.52 miles of roads whereas Alternatives C and D would only rehabilitate 5.66 miles of roads because the other 13.86 miles would be opened to the public either during deer season or all year. Rehabilitating roads under all three alternatives would have long-term negligible to minor beneficial impacts on soil resources by limiting surface disturbance along the roads.

At South Cow Mountain, Alternative B would close 24.75 miles of road compared to Alternatives C and D which would close 12.28 miles of road. Impacts on soil resources from Alternative B would be the greatest with long-term negligible to minor beneficial impacts due to closure of roads used for OHV activities. Roads closed in Alternatives C and D are currently not maintained and represent a small fraction of the roads available in the South Cow Mountain area and therefore impacts from these two alternatives would likely be long-term and beneficial but negligible.

4.15.5.2 Knoxville

Under Alternative B, 9.1 miles of roads would be closed to all motorized use resulting in long-term negligible to minor beneficial impacts depending on the location of road closures, landscape characteristics, and existing condition of roads. Alternatives C and D would close 5.35 miles of roads resulting in fewer beneficial impacts than Alternative B on soil resources. Under all four alternatives, 5.05 miles of road would be rehabilitated and used for non-motorized activities providing beneficial impacts.

4.15.5.3 Cache Creek

All four alternatives would close two roads for a total of 2.7 miles resulting in long-term negligible to minor beneficial impacts on soil resources depending on the location of road closures, landscape characteristics, and existing condition of roads.

4.15.5.4 Cedar Roughs

Alternative B would close and rehabilitate 7.68 miles of existing jeep roads that do not have legal public access. Only non-motorized use would be allowed after rehabilitation. This could have a beneficial negligible impact on soil resources. Alternatives C and D would open the same 7.68 miles of road described in Alternative B for non-motorized and mechanized use resulting in negligible to minor impacts on soil resources.

4.15.5.5 Berryessa

Alternative B would remove and rehabilitate most of the existing roads and fire breaks whereas Alternatives C and D would acquire legal public access and allow non-motorized recreation on all existing roads and fire breaks. Mechanized recreation would be limited to designated roads and trails. As there is no public access on the roads closed in Alternative B, negligible beneficial impacts on soil resources could be expected. Alternative D would also allow motorized recreation on 12.75 miles of roads. Considering that the public cannot currently legally access the Berryessa area, Alternatives C and D would have long-term negligible to minor impacts on soil resources by allowing recreationists to enter the area. Level of impact should be negligible to minor depending on the extent of development, numbers of visitors attracted, and landscape characteristics.

4.15.5.6 Stornetta

Alternative B would remove and rehabilitate 3.05 miles of existing interior roads whereas Alternative C would use existing roads for mechanized and non-motorized use. Comparatively Alternative D would develop vehicle access locations and use the existing closed interior routes for vehicular access as well as mechanized and non-motorized recreation. Closing or rehabilitating roads in Alternative B would have little impact on soil resources as there is no public access to these roads currently. Alternative C would allow motorized users (OHVs) and hikers, bikers, and equestrians to use the existing roads in Stornetta which are currently available to administrative access only. This would have long-term minor to major impacts on soil resources depending on landscape characteristics, number of visitors attracted, and nature of recreational uses. Alternative D would provide additional facility development and allowable uses that should result in long-term minor to major impacts on soil resources depending on the same factors given above.

4.15.5.7 Geysers

Alternative B would close 4.75 miles of roads to all uses except administrative/official use whereas Alternatives C and D would allow year-round mechanized, non-motorized and motorized use of these roads. As there is limited public access on these roads closed in Alternative B, there should be negligible beneficial impacts on soil resources. Due to the developed landscape, noise, visual setting, and lack of recreation facilities at the Geysers area, it is unlikely that many more non-sightseeing recreationists will visit the area due to year-round access available in Alternatives C and D. Impacts for these Alternatives should be negligible to minor depending on landscape characteristics, number of visitors attracted, and nature of recreational uses.

4.15.5.8 Scattered Tracts

Alternative B would remove and rehabilitate existing routes and fire breaks. As there is no public access on the roads closed in Alternative B, negligible beneficial impacts on soil resources could be expected. Comparatively, Alternatives C and D would acquire legal public access and develop public vehicle access as well as use existing routes for vehicular and non-motorized recreation. Alternatives C and D could allow the public to access lands that are currently not open to the public. This would have long-term negligible to minor impacts on soil resources by increasing disturbance associated with motorized, mechanized and non-motorized recreation. Level of impact should be negligible to minor depending on the extent of development, numbers of visitors attracted, and landscape characteristics.

4.15.6 Impacts on Soil Resources from Recreation Resources

Management goals and decisions regarding Recreation Resources have the potential to impact Soil Resources throughout the planning area. Factors affecting soil resources include allowable uses, facility and trail development, signage and interpretation, monitoring, and special uses. The impact of these types of changes will range from short-term, localized, and negligible to long-term and major, depending on the extent of surface disturbance, the nature of the allowed use, landscape characteristics, and the potential for increased recreational demand over time.

Any trail development will be consistent with the management zone prescriptions and recreation program goals. Potential trail connections could include utilizing existing jeep roads and fire breaks/roads. Re-routing some of these segments may be required due to excessive steepness, erosion or poorly designed segments. These re-routed segments will be close and rehabilitated.

4.15.6.1 Common to All Alternatives

Changes in the types of allowable uses (motorized, non-motorized, or mechanized) could have long-term impacts ranging from negligible to major, depending on the extent and nature of allowable use, number of visitors allowed uses would attract, and landscape characteristics, such as slope, soil properties, and vegetative community. Allowable uses, such as motorized or OHV use could have an impact on soil resources from surface disturbance; this might include surface, rilling, and gullying types of erosion contributing to sedimentation and nonpoint source pollution. Mechanical and non-motorized uses can also have an impact on soil resources depending on the same factors given above.

Site improvements, including installing parking and adding campsites and trails, could decrease vegetation cover and increase erosion by disturbing the surface and increasing access and use, but best management practices to avoid erosion during construction would minimize these temporary effects to acceptable levels. Constructing these facilities could decrease vegetation cover and increase erosion in the long-term by attracting more visitors; however, improving the facilities could decrease disturbance of these resources in the long-term by regulating and possibly limiting the areas that visitors could disturb. Facility development has the potential for short to long- term impacts ranging from minor to moderate.

Various management goals common to all management areas should have a beneficial impact on soil resources. Numbering, naming, and posting all trails, for example, as well as providing timely monitoring and maintenance for all roads, trails, signs, and facilities, will decrease erosion by increasing use of designated trails, and limiting disturbance in restricted areas. This impact will be difficult to measure directly and will probably be a minor beneficial impact overall. Localized impacts may be more significant.

In addition, emerging new special uses may have impacts on soil resources that are unanticipated at this time. Impacts associated with new recreational uses will be proportional to the numbers of people engaging in them, nature of use, and landscape characteristics. Monitoring to identify resource impacts, particularly along trails, campgrounds, staging areas, and parking areas, for both existing and new uses, will allow impacts to soil resources to be more quickly identified and mitigated resulting in minor beneficial impacts.

Alternative A (Preferred Alternative for Knoxville and Berryessa) proposes no significant changes to current management practice, and has no significant impacts.

4.15.6.2 Cow Mountain

North Cow Mountain

Alternative B proposes the removal of some primitive campsites, the development of up to 20 miles of trails, the closure of firebreaks and some roads, and the opening the Middlecountry to mountain biking. The effect of these developments should be negligible to minor beneficial impacts with a negligible impact from the additional trails and mechanical allowable use. Alternative C (Preferred Alternative), which calls for construction of new facilities and the re-development of an old campground, should have negligible to minor impacts, depending on the location of new facilitates, number of visitors attracted, landscape characteristics, and nature of recreational uses. Alternative C also proposes to maintain sections of a road and trail that previously were not cared for, providing negligible beneficial impacts. Alternative D proposes even more extensive development including up to 60 miles of trails, which may lead to minor to moderate impacts on soil resources, depending on the same factors given above.

South Cow Mountain

Alternatives A and B, with no major changes, should have no impact. Alternative C (Preferred Alternative) proposes the expansion and redevelopment of some facilities resulting in minor to moderate impacts, depending on the location of new facilities, number of visitors attracted, landscape characteristics, and nature of recreational uses. Alternative C also calls for the closure of 3 miles of routes and the re-routing and rehabilitation of some trail segments due to excessive steepness and up to

40 miles of trail development for reroutes for erodable soils, sensitive resource protection and expanded opportunities. These closures and developments could have negligible to moderate short-term to long-term impacts on soil resources, depending on route location, landscape characteristics, and severity of existing erosion. Short sections of re-route should have minor localized beneficial impacts. Longer re-routes may produce minor to moderate long-term beneficial impacts, depending on the same factors given above. Alternate D proposes similar management levels to Alternative C. Alternative D proposes up to 40 miles of trail development for reroutes for erodable soils, sensitive resource protection and expanded opportunities. The impacts of Alternative D should be negligible to moderate short-term to long-term impacts, depending on the location and extent of the developments, associated recreational uses, and the number of new visitors attracted to them.

4.15.6.3 Knoxville

Alternative B proposes closing some existing routes while following the Common to All Management Areas recommendations for allowable uses, including OHV use. The effect of the route closures should be negligible beneficial impacts, depending on route location, landscape characteristics, and severity of existing erosion. Alternative B also proposes the development of up to 20 miles of new trials. Alternative C focuses on improvements to the trail network, closing and rehabilitating some trails, while developing up to 30 miles of new trails. The impacts of these changes would be negligible to minor impacts and would depend on the same factors given above. Alternative D is similar to Alternative C, but includes development of up to 40 miles of new trials, which has the potential to attract new users and increase erosion; however, these developments will most likely result in negligible to minor impacts on soil resources.

4.15.6.4 Indian Valley

Alternative B closes access to OHV use in the Frontcountry Zone while following the remainder of the *Common to All Management Area*s recommendations for allowable uses. The effect of the motorized use closure should be a negligible to minor beneficial impact. Alternative B also proposes to close some existing routes and develop new trails on the east side. The effect of these developments should be a negligible impact, depending on the extent and location of trail development and route closure and rehabilitation. Alternative C (Preferred Alternative) calls for adding more basic trailhead facilities and designing and constructing a trail network, which should have negligible to minor impact on soil resources. Alternative C also includes the re-routing and rehabilitation of some trail segments due to excessive steepness or erosion Short sections of re-route should have minor localized impacts. Longer re-routes may produce minor to moderate long-term impacts, depending on route location, landscape characteristics, and severity of existing erosion. Alternative D adds to Alternative C by proposing more development, i.e., more developed trailhead and camping facilities, which will result in negligible to minor impacts to soil resources.

4.15.6.5 Cache Creek

Alternative B closes access to OHV use in Middlecountry and Frontcountry Zones while following the remainder of the Common to All Management Areas recommendations for allowable uses. The effect of the motorized use closure should be a negligible to minor beneficial impact. Alternative C (Preferred Alternative) calls for the development of some new loop trails and new trailheads, an equestrian camp, and some primitive camping facilities resulting in negligible to minor impacts. Alternative C also limits

OHV use in the Frontcountry Zone resulting in negligible beneficial impacts. Alternative D would add more development in all zones except Primitive, and accept permit applications for motorized special events. The former would attract more visitors, but their impact on soil resources would depend on the nature of development, landscape characteristics, and level of use. Motorized special events could have minor to moderate impacts, depending on the same factors given above. Alternative D also proposes re-routing and rehabilitating some trail segments due to excessive steepness or erosion. These closures could have a minor to moderate beneficial impact on soil resource, depending on location and extent of route closures, landscape characteristics, and severity of existing erosion.

4.15.6.6 Cedar Roughs

Alternatives B and C follow the Common to All Management Areas, except that Alternative B adds 30 miles of new trails while Alternative C (Preferred Alternative) adds staging areas, parking and trailhead facilities, and 40 miles of new trails. The impacts of these developments would be negligible to minor depending on the location of new development, landscape characteristics, nature of use, and extent and numbers of visitors attracted. In addition, motorized and mechanized uses are closed in Alternatives B, while only motorized is closed in Alternative C. These closures should result in negligible to minor beneficial impacts. Alternative D, which adds full service parking facilities with camping, trash pickup, restrooms, and 50 miles of new trails, would result in negligible to minor impacts, depending on the same factors given above.

4.15.6.7 Berryessa

Motorized and mechanized uses are closed in Alternatives B, while motorized use is closed in Alternative C. These closures should result in negligible to minor beneficial impacts. Alternatives C and D propose new trail development, up to 30 and 40 miles respectively, to establish a connection with Cache Creek. This development should have negligible to minor impacts.

4.15.6.8 Stornetta

Alternatives B, C (Preferred Alternative) and D propose new trail development that should result in negligible impacts.

4.15.6.9 Geysers

Alternative C (Preferred Alternative) adds some access and basic trailhead facilities and up to 40 miles of new trails to connect fragmented lands while allowing motorized uses during deer season. These developments should have negligible to minor impacts depending on the location of new trails and facilities, landscape characteristics, nature of use, and numbers of visitors attracted. Alternative D, which proposes a higher level of development for trails and trailhead facilities, would result in negligible to minor impacts, depending on the same factors given above.

4.15.6.10 Scattered Tracts

Alternative C (Preferred Alternative) adds some accesses and basic trailhead facilities while allowing motorized use in all tracts areas other than Black Forest and Cedars ACEC. These developments and uses should result in negligible to minor impacts, depending on the location of new facilitates and trials,

number of visitors attracted, landscape characteristics, and nature of recreational uses. Alternative C also includes the re-routing and rehabilitation of some trail segments due to excessive steepness while proposing to create up to 25 miles of new trails to connect remote areas and up to 20 miles of new trails in Black Forest for mechanized and non-motorized uses. Resulting impacts should be negligible to minor beneficial, depending on route location, landscape characteristics, and severity of existing erosion. Alternative D allows motorized use in all zones and proposes to develop up to 35 miles of new trails in Scattered Tracts. It also adds a developed campground at Black Forest along with up to 30 miles of new trials. These developments should result in negligible to minor impacts depending on the extent of development and motorized use, numbers of visitors attracted, and landscape characteristics.

4.15.7 Impacts on Soil Resources from Soil Resources

Soil erosion is a naturally occurring process on all land caused by water, wind or human disturbance. Management goals and decisions affecting soil resources include BMPs, mitigation measures, monitoring levels, and site selection criteria. The impact of these management goals will range from short-term, localized, and negligible to long-term and major, depending on the extent and nature of development, landscape characteristics, management actions and allowable uses.

4.15.7.1 Common to All Alternatives

There are goals, objectives, management actions and allowable uses common to all alternatives that will impact soil resources. Goals to maintain or improve soil health by preventing and minimizing soil erosion and compaction, as well as those to provide monitoring of suspended sediments should have a beneficial impact. Objectives to minimize the loss of topsoil and to access soil and landscape characteristics, BMPs and mitigation measures (see Appendix Q) should also have a beneficial impact. In addition, management actions, such as those to restrict the construction of trails on slopes greater than 16 percent and where the soil erodibility factor is greater than K 32 should have a beneficial impact. Additional beneficial actions include those to design and construct roads to cause minimal disruption of natural drainage patterns and to evaluate existing trails and roads for sediment production, and drainage in areas where NOA is likely to be present.

Alternatives A and B continue current management for all management areas and therefore have no significant impacts. Alternative C is the Preferred Alternative for all management areas in the planning area.

4.15.7.2 Cow Mountain

Alternatives C and D would alter trails to decrease sediment production. Alternative C would prioritize roads and trails for analysis and appropriate mitigation as well as redesign appropriate trails and Alternative D would re-route all OHV roads and trails discharging into streams or build crossing structures specifically designed to prevent non-point source pollution. Either alternative should have long-term minor to moderate beneficial impacts on soil resources by increasing soil stability and reducing sediment loading into local waterbodies. In addition, Alternative D management actions would refine the rain closure policy in South Cow Mountain, decommission the east end of Mendo-Lake Road, and utilize erosion control BMPs for road building. These actions would provide long-term minor to moderate beneficial impacts.

4.15.7.3 Knoxville

Alternatives C and D would alter trails to decrease sediment production. Alternative C would evaluate all trails and roads for sediment production and develop projects to minimize soil loss and erosion, whereas Alternative D would re-route all trails discharging into streams or build crossing structures specifically designed to prevent non-point source pollution. Either alternative should have long-term minor to moderate beneficial impacts.

4.15.7.4 Indian Valley

Alternative C includes sediment production mitigation measures and participation in a methyl-mercury assessment and recovery plan. Both actions should have long-term negligible to minor beneficial impacts. In addition, Alternative C would close and rehabilitate undesignated routes whereas Alternative D would only close road and trails near mine sites. Closing routes under either alternative should have long-term negligible to minor beneficial impacts by reducing soil disturbance.

4.15.7.5 Cache Creek

Alternatives C and D would consider closing some trails and roads. Alternative C would evaluate sediment production on existing roads and trails and close those that do not contribute to a sustainable, manageable trail system. Alternative D would also decommission and rehabilitate roads and trails through re-contouring and planting native vegetation. Both Alternatives C and D should have long-term negligible to minor beneficial impacts.

4.15.7.6 Cedar Roughs

Alternative C would appraise remnant trails located for sediment production and if conditions are not acceptable, close, re-route, or apply applicable mitigation measures (see Appendix Q). Closure, re-routing, or applying mitigation measure should provide long-term negligible to minor beneficial impacts, depending on management action, landscape characteristics, and severity of existing erosion.. Analyzing erosion management practices and riparian monitoring under Alternative C should also provide long-term negligible to minor beneficial impacts.

4.15.7.7 Stornetta

Alternative C would monitor the affects of allowable uses on soil health and based on results potentially change allowable uses or instigate mitigation projects. It would also monitor geological changes and determine affects on soil properties, while requiring temporary fencing around all waterbodies in areas where grazing is taking place. Alternative C should have long-term minor beneficial impacts on soil resources. Alternative D would provide additional benefits by permanently closing riparian zones to grazing and equestrian use and constructing permanent fencing around standing water.

4.15.7.8 Geysers

Alternative C would identify and quantify sediment production, evaluate current facilities and proposed power plants for sediment production and possible implementation of mitigation measures providing long-term negligible to minor beneficial impacts.

4.15.7.9 Scattered Tracts

Alternatives A, B and D would continue current management of soil resources with management of Black Forest done on a project-by-project basis. Alternative C would continue current management of all Scattered Tracts, while collecting baseline data on soil health, productivity, site stability, and hydrological function in Black Forest. These management actions should provide long-term negligible to moderate beneficial impacts. Alternative C would also use data gathered on existing roads and trails in future determinations of roads to decommission due to erosion. Future road decommissioning and rehabilitation should provide long-term negligible to moderate beneficial impacts.

4.15.8 Potential Cumulative Impacts to Soil Resources

Under all alternatives, surface disturbance can lead to erosion, sedimentation, and non-point source pollution. The Ukiah Field Office intends to minimize impacts to soil resources through proper design, maintenance and monitoring of new routes, trails, and facilities, while also assessing and mitigating impacts to soil resources caused by existing uses. These goals will have a beneficial long-term impact on soil resources and associated erosion and sedimentation. Cumulative impacts on soil resources will also be affected by areas outside the Ukiah Field Office. Resources such as fire management, travel management, and recreation can impact land uses and disturbance within the planning area.

4.16 IMPACTS ON AIR QUALITY

Maintaining ambient air quality in the Ukiah Field Office depends on management actions within the planning area as well as regional actions that can affect potential sources of emissions and dust generation. The current regulatory framework for maintaining air quality requires agencies and project proponents to coordinate closely with local and regional air districts and to obtain permits for planned actions that introduce sources of emissions. The California Clean Air Act of 1988, states that it is the responsibility of each APCD and AQMD within the state to attain and maintain California's ambient air quality standards. Plans addressing the management of resources on public land would include a consideration of the effects of the action on air quality and measures to avoid or minimize effects, either as part of a planning level analysis or for specific actions. Activities on public lands that could affect air quality include prescribed fire, recreation, travel management, construction, and energy and mineral development. Alternative A is the Preferred Alternative for all management areas.

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5.0 CONSULTATION AND COORDINATION

5.0 CONSULTATION AND COORDINATION

5.1 INTRODUCTION

This document has been prepared with input from and coordination with interested agencies, organizations, and individuals. Public involvement is a vital component of BLM planning and the NEPA process for vesting the public in the decision-making process and allowing for full environmental disclosure. Regulations for implementing public involvement are established in 43 CFR 1610 and 40 CFR 1506.6. BLM has also developed guidance and policy related to public participation and collaborative planning, including the *Land Use Planning Handbook* (BLM Handbook H-1601-1) (BLM 2005).

Public involvement in the development of the Ukiah RMP began early in the process, and will continue through completion.

5.2 PUBLIC SCOPING ACTIVITIES

The objectives of public scoping prior to NEPA analysis are to:

- Invite agencies and the public to participate;
- Identify a preliminary list of environmental and socioeconomic issues or themes to address in the NEPA document; and
- Identify and eliminate issues determined to be insignificant or out of the RMP's scope.

5.2.1 Notice of Intent

The scoping process for the Ukiah Field Office RMP opened with publication of the Notice of Intent (NOI) in the *Federal Register* on June 21, 2004 (volume 69, no. 118). This NOI notified the public of the BLM's intent to develop a plan for those lands within the Ukiah Field Office boundary. The NOI also solicited public comments and participation.

5.2.2 Press Releases

Press releases were sent to local and major Northern California news media outlets. Local radio stations KWINE, KUKI, and KNTI ran stories about the RMP/EIS and the public scoping meetings. Press releases were posted on the BLM's California homepage (news section) and published in News.bytes, BLM-California's electronic newsletter that circulates to subscribers inside and external to the BLM.

5.2.3 Project Website

An informational website, http://www.ca.blm.gov/ukiah with an associated page link to the RMP/EIS was made available for the public on June 16, 2004. The website provided background information on the Ukiah Field Office, information about BLM's planning process, a schedule regarding the Ukiah RMP/EIS, plus an opportunity for people to email comments directly to the Ukiah BLM office. By September 23, 2004, the RMP/EIS page of the website received 5,086 hits.

5.2.4 Planning Update Mailers

The BLM produced a special Planning Update mailer to announce the scoping effort. These were sent via direct mail on October 16, 2002. A total of 35 letters were sent to county governments, other state and federal agencies, identified special interest groups, and individuals who requested to be notified about any planning public scoping meetings.

5.2.5 Public Scoping Meetings

Nine public scoping meetings were held in August and September of 2004, with all but one located in communities close to lands managed by the Ukiah Field Office. Of the nine meetings, two were specific scoping meetings with Native American tribes. Attendance for all of the meetings totaled 108 individuals. Public scoping for the Ukiah RMP/EIS is broken down in the following table:

Table 5-1: Ukiah RMP/EIS Public Scoping Meetings

DATE	TIME	LOCATION	ATTENDANCE
August 11, 2004	7:00pm to 9:00pm	Colusa, CA	2
August 12, 2004	7:00pm to 9:00pm	Lakeport, CA	18
August 13, 2004	10:00am to 12:00pm	Arcata, CA	16 (RAC meeting)
August 17, 2004	10:00am to 12:00pm	Ukiah, CA	11 (Interagency)
August 17, 2004	7:00pm to 9:00pm	Ukiah, CA	18
August 18, 2004	7:00pm to 9:00pm	Napa, CA	7
August 19, 2004	10:00am to 3:00pm	Ukiah, CA	12 (Tribal)
August 20, 2004	7:00 pm to 9:00 pm	Point Arena, CA	20
September 14, 2004	10:am to 4:00pm	Colusa, CA, Williams, CA, Brooks, CA, Clear Lake Oaks, CA	4* (Tribal) Nobody came to the original meeting so we visited the tribal offices.

The meetings were held to gather information and answer questions regarding the current and future management of the public lands administered by the Ukiah Field Office. Participants were encouraged to provide their ideas, thoughts, and perceptions. Most participants asked questions with regard to the RMP, planning process, and/or activities currently happening on the public lands.

All of the meetings followed the same format with an informal gathering period of 15 to 20 minutes. Members of the public were greeted at the entrance and asked to sign in. Visitors were encouraged to look over maps and planning material and to ask questions. After a brief introduction by either the field manager or associate field manager, the associate field manager gave a PowerPoint presentation on the planning process, outlining what the plan hoped to achieve, and the public's role in contributing to the plan direction and substance. After the presentation, BLM staff facilitated a question and answer period of roughly 30 minutes. All those in attendance were encouraged to provide written comments either at the meeting or to mail them to the Ukiah BLM office by September 16, 2004.

The following organizations and agencies were represented among the people who signed in at the public meeting:

- California Wilderness Coalition
- California Native Plant Society

- UC Davis Reserve System
- Barrack Mining Corporation
- Lake County Land Trust
- Mendocino National Forest
- Lake County Planning Department
- Lake County Department of Air Quality
- Lake County Division of Public Works
- National Marine Fisheries Service
- California Department of Fish and Game
- California Division of Oil and Gas and Geothermal Resources
- California Regional Water Quality Department
- International Mountain Bike Association
- Backcountry Horseman
- Clear Lake Horseman
- City of 10,000 Buddahs
- Tuleyome Group
- Berryessa Trails
- Bay Ridge Trails
- Robinson Rancheria
- Upper Lake Rancheria
- Pinoleville Rancheria
- Sherwood Rancheria
- Dry Creek Rancheria
- Yokayo Tribe (Not Federally Recognized)
- Wappo Tribe (Not Federally Recognized)
- Guidiville Rancheria
- Potter Valley Rancheria
- Big Valley Rancheria
- El-em Rancheria
- Manchester/Point Arena Rancheria
- Cloverdale Rancheria
- Stewarts Point Rancheria

- Colusa Rancheria
- Rumsey Rancheria
- Cortina Rancheria
- Redbud and Mendocino Coast Chapters of the Audubon Society
- Point Arena City Council
- Friends of the Garcia

There were no federal, state, or county elected officials or their representatives present at any of the meetings though all were contacted through direct mailings.

5.2.6 Public Scoping Results

In all, 647 written comments were received during the comment period. The comment period started June 16, 2004 when the Federal Register Notice was officially printed, and ended on September 16, 2004. One comment (a "form" letter with the same comments) was received 600 times. This "form" letter comment came from locations across the country, was signed by different people, and then either faxed, mailed, or emailed to the Ukiah Field Office.

Of the remaining 47 comments, 37 came from individuals, communities, agencies, and organizations within a two-hour driving time distance of public lands managed by Ukiah Field Office. Six written comments came from locations whose driving time distance from Ukiah public lands exceeded two hours. One comment came from out-of-state (Nevada), and three written comments had no identified point of origin.

Commenting agencies included the US Forest Service Mendocino National Forest, County of Lake, US Environmental Protection Agency, and the Lake County Air Quality Management District.

Commenting organizations included: the Redbud and Mendocino Coast Chapters of the Audubon Society, California Native Plant Society, California Wilderness Coalition, Defenders of Wildlife, Natural Resources Defense Council, Wilderness Society; Berryessa Trails, Lake County Land Trust; Sacramento Horsemen's Association, Clear Lake Horsemen's Association, and the Backcountry Horsemen's Association.

Of the 17 tribes represented at the public scoping meetings, written comments were received from the Yokayo Tribe of Indians, Potter Valley Tribe, Dry Creek Rancheria Band of Pomo Indians, and the Manchester Band of Pomo Indians.

Written public comments were taken at the public scoping meetings.

5.2.6.1 Protection of Areas with Wilderness Characteristics

Most of these comments came via the "form" letter (600 signed form letters received). These comments urge the BLM Ukiah Field office to protect key areas that meet the "congressional definition of wilderness as well as outstanding biological values." Areas highlighted include Cedar Roughs, Blue Ridge,

and Cache Creek. Management suggestions included enlarging the Cache Creek Wilderness Study Area by 10,415 acres; managing the Westside of Walker Ridge and the Blue Ridge areas roadless areas; restoring and managing the Payne Ranch to be as a roadless area; and establishing the Black Forest, parts of the Knoxville Recreation Area, and the Stornetta Ranch as Areas of Critical Environmental Concern. The letters emphasized that the BLM should protect identified public lands "from harmful human activities including the creation of new unplanned vehicle routes which have contributed to soil erosion, water quality degradation, wildlife habitat destruction, and the loss of wilderness."

5.2.6.2 Public Land Access

Better access to the public lands managed by the Ukiah Field office is a local issue of importance. The lack of access to the approximately 6,000 land-locked public acres at Berryessa Peak was the major complaint identified through public comment. Those who commented said access to Berryessa Peak is being requested for hiking use only. Access is also being requested by Lake County Community Development to the top of Mount Konocti and Buckingham Peak.

The Yokayo Tribe and the Manchester Band of Pomo Indians requested better access to areas with cultural significance and areas important for food and materials gathering.

One comment from a land owner adjacent to the Knoxville Public Lands requested on behalf of the other landowners that BLM continue to restrict vehicular access along Adams Ridge. Their rationale is to allow the vegetation to re-grow after the "16 Fire" which burned in 1999.

Though no written comments were received, the Ukiah Field office has been informed over the years by the Sonoma County Agricultural and Open Space District, Bay Ridge Trails Inc, California State Parks, and the public at large that BLM needs to pursue public land access to the almost 1,600 acre BLM parcel referred to as "The Cedars" in Sonoma County. Special interest groups have been working to connect the Austin Creek State Recreation Area to "The Cedars" via a public easement trail.

Four written comments expressed disappointment in BLM for allowing public access onto the Stornetta Public Lands too soon. They recommended that BLM close the Stornetta Public Lands until biological, geological, and cultural studies are completed. The California Native Plant Society also suggested that public access to the Stornetta Public Lands be limited to Lighthouse Road with a secondary access point coming from Miner Hole Road.

5.2.6.3 Wind Energy Development at Walker Ridge

Those who commented on wind energy development referred specifically to Walker Ridge and were for the most part not supportive. The general feeling in the comments is that the Walker Ridge Wind Energy Project if allowed to go forward as proposed, would impact public lands with wilderness characteristics. The comments also suggested that the Walker Ridge area requires further evaluation before any decisions are made regarding wind energy development. The other considered wind energy development area's Knoxville and the Geysers received no comments.

5.2.6.4 Equestrian Recreational Use

Of all of the written public comments received regarding recreational activities, the greatest number supported further opportunities for equestrian use and access. Those who commented supported an increase in opportunities for horseback use such as access to more unpaved single-track trails and fire roads, development of additional and adequate unpaved parking, watering facilities, and development of established areas for horse camping. Some comments addressed specific locations such as Cowboy Camp, High Bridge, and the Stornetta Public Lands as areas to be developed for equestrian uses.

Two of the written comments questioned if equestrian use should be either limited or prohibited on the Stornetta Public lands. Their position is that horses can damage the environment.

The Mendocino National Forest commented on the possibility of having equestrian trails connect between the BLM and Forest Service lands, and jointly planning trail projects.

5.2.6.5 Additional Recreational Trails

All of the written comments from individuals and organizations supported more non-motorized trails for hiking and mountain biking. The additional trails are suggested for Cow Mountain, Mount Konocti, Cache Creek, and along Blue Ridge to Berryessa Peak.

A comment regarding trails was received from the Lake County Air Quality and Management District who would like BLM to limit the construction and development of new trails and/or facilities in areas with known asbestos deposits.

5.2.6.6 Mountain Bike Use

A commenter suggested that the BLM should allow mountain bike use on the Stornetta Public Lands.

5.2.6.7 Land Tenure

One written comment specifically asked the BLM to sell land locked parcels at fair market value to adjacent land owners and use the proceeds to acquire other lands of importance to the public.

Three written comments asked for BLM to acquire lands to connect ("link") areas together in support of improved biodiversity, wildlife habitat (including migration corridors), and to improve hiking opportunities.

Four written comments, all from Native American Tribes, asked the BLM to look further into transfer in trust of public lands to the tribes (re-establishment of Indian land tenure). Their basis for the re-establishment of Indian land tenure is cultural heritage, socio-economic stability, and the tribe's access to financial resources which would enable them to better manage those lands now administered by the BLM.

5.2.6.8 Fire Management

Of the three comments received, one was from a private individual who feels campers can reduce the fuel load by using fuels for campfires. The other comments were from the Lake County Air Quality Management District, and the California Wilderness Coalition who would like to see BLM consider other methods for hazardous fuels reduction where feasible (in addition to prescribed fire). The California Wilderness Coalition emphasized the use of non-mechanical treatments for hazardous fuel reduction. They also emphasized implementation of an "ecologically-based" fire restoration program.

The Mendocino National Forest commented on the need to implement National Fire Plan projects in adjoining areas, and to integrate pre-suppression planning and preparation.

5.2.6.9 Education and Public Outreach

The Yokayo Tribe said public land managers should provide more educational opportunities on the public lands.

Two comments requested better maps for the Knoxville Public Lands. In addition to better maps, a comment said that BLM needs to do a better job providing visitor information, law enforcement and maintenance at the Knoxville Off-highway Vehicle Recreation Area.

5.2.6.10 Recreational Shooting

The individual who commented asked BLM to do a better job in managing shooting on public lands. Their comments were specific to areas at North Cow Mountain and Knoxville. At both shooting areas the individual requested better maintenance of the shooting areas. At Knoxville, a suggestion was made to move the pistol range to a new location, and acquire the private lands belonging to the Barrack Mining Corporation for shooting range use.

5.2.6.11 Vegetation Management

The California Native Plant Society and the Lake County Air Quality Management District commented on BLM's need to implement an effective vegetation (weed) management program.

5.2.6.12 Wildlife

Two of the individual written comments were specific to enforcing a dog leash law on the Stornetta Public Lands as a means to better protect wildlife.

The Mendocino Coast Audubon Society provided a listing to BLM of the known birds of concern on the Stornetta Public Lands. They also identified inadequacies with the wildlife species list provided to the BLM from Manchester Beach State Park.

The California Wilderness Coalition said BLM's RMP should consider adapting a policy relative to habitat "edge."

5.2.6.13 Off-Highway Vehicle Recreation (OHV)

The California Wilderness Coalition and the Lake County Community Development Department said actions are long overdue to improve on the management of OHV use on the public Lands. Both parties recommended a well designed, mapped and maintained transportation system. They also said the Ukiah Field office must eliminate all vehicle "open areas" and require the public to use only existing authorized routes of travel.

The Mendocino National Forest recommended connectivity for OHVs using BLM and Forest Service lands, and identified opportunities to share resources for law enforcement, and/or OHV management.

5.2.6.14 Water Quality

The California Wilderness Coalition and the California Regional Water Quality Control Board stressed the use of "Best Management Practices" when it comes to implementing on-the-ground projects that potentially effect water resources.

5.2.6.15 Livestock Grazing

The California Wilderness Coalition urged the Ukiah field Office to continue to follow BLM's Standards and Guides for Rangeland Health and Livestock Grazing, and to perform adequate monitoring.

5.2.6.16 Wild and Scenic Rivers

The California Wilderness Coalition asked the BLM to include a comprehensive Wild and Scenic Rivers inventory, and a schedule for designation in the RMP.

5.2.6.17 Community Involvement and Collaboration

All of those who commented mentioned the importance of maintaining their good working relationships with the BLM Ukiah Field Office. Specific suggestions included collaborative trail development; cooperative equestrian use development; outside assistance with recreational use/habitat management inventories; collaborative fire and fuel hazard reduction projects; outside assistance with vandalism repair, clean up, and litter removal; and collaborative methods of educational outreach.

A scoping report published in November 2004 details the results of public scoping. Information received through scoping was evaluated, verified, and incorporated into the RMP and EIS as appropriate.

5.2.7 Other Outreach and Cooperation

The Ukiah Field Office also discussed the initial work on management alternatives at four public workshop meetings. A news release announcing the meetings was released on January 26, 2005. The four public meetings were held in Ukiah, Point Arena, Lakeport and Woodland in late February 2005. BLM staff presented draft alternatives for specific public land areas and the public was given the opportunity to comment on the adequacy of the draft management alternatives in addressing land use and natural resource issues.

5.3 PUBLIC REVIEW AND COMMENT ON THE DRAFT RMP/EIS

Following the official public scoping comment period, the next official public comment period will open upon publication of the Draft RMP/Draft EIS in September 2005, although BLM welcomes public input at any time during the project.

The BLM will announce the availability of the Draft RMP/Draft EIS by publishing notices of availability in local newspapers, the Ukiah Field Office website, and the *Federal Register*, which will open a formal 90-calendar-day public comment period. The Draft RMP/Draft EIS will be available for review and/or download from the project website. It will also be available by request in a bound paper format or via CD ROM.

The Draft RMP/Draft EIS will be widely distributed to elected officials, regulatory agencies, interested organizations, and members of the public. Copies will also be available at local libraries in surrounding communities, and by request.

During the 90-day public comment period, public meetings will be held in Point Arena, Ukiah, Lakeport, and Woodland.

At the conclusion of the public comment period, the Draft RMP/Draft EIS will be revised. A Proposed RMP/Final EIS will then be published. The availability of the proposed document will be announced in the *Federal Register*, and a 30-calendar-day public protest period will follow. Anyone considering protesting the proposed plan may meet with the BLM to discuss his or her protest concerns.

At the conclusion of the public protest period, the BLM California State Director will evaluate and resolve any protests. After protests are resolved, the BLM California State Director will publish the approved RMP and Record of Decision. Its availability will be announced in the *Federal Register*.

5.4 LIST OF PREPARERS

This RMP/EIS has been prepared by an interdisciplinary team of resource specialists from the BLM Ukiah Field Office. EDAW, Inc., an environmental consulting firm in San Francisco, California, assisted the BLM in the preparation of these documents and in the planning process. These preparers are listed in Table 5-2.

Table 5-2: List of Preparers

NAME	POSITION	PLANNING ROLE
BLM Staff		
Rich Burns	Field Office Manager	Project Management, Planning, NEPA Requirements
Gary Sharpe	Assistant Field Manager	Project Management, Planning, NEPA Requirements
Eli Ilano	NEPA Specialist	Project Management, Planning, NEPA Requirements
Larry Ames	Interpretive Specialist	Interpretive, Education
Frank Arriaza	Natural Resources Specialist	Soil, Air, Water Resources
Pardee Bardwell	Range Conservationist	Wildlife, T&E Species
Julie Burcell	Archaeologist	Historical, Archaeological Resources

NAME	POSITION	PLANNING ROLE
Brad Colin	Outdoor Recreation Planner	Recreation (OHV)
Bill Dabbs	Realty Specialist	Lands, Realty, Mineral Resources
Diane Knox	GIS Coordinator	GIS/Spatial Data
Jonna Hildenbrand	Outdoor Recreation Planner	Recreation
James Dawson	Natural Resource Specialist (Fuels)	Fire, Fuels Management
Yolanda Chavez	Native American Coordinator	Native American Consultation
Gregg Mangan	Cache Creek Natural Area Manager	T&E Species, Terrestrial Biology
Alice Vigil	Realty Specialist	Realty
Jeff Fontana	Public Affairs Officer	Media Relations, Elected Officials Outreach
EDAW, Inc. Staff		
David Blau	Principal in Charge	Alternatives Development, QA/QC
Laura A. Watt	Project Manager	Project Manager, Alternatives Development, Lands and Realty, Socio-Cultural Analysis
Ryan Lafrenz	Assistant Project Manager	Assistant Project Manager, Minerals, Renewable Energy
Steve Nachtman	Senior Recreation Planner	Recreation, Special Designations, QA/QC
Kimberly Christensen	Public Involvement Coordinator	Public Outreach
Mark Farman	Senior Resource Economist	Socioeconomic Analysis
Steve Pavich	Resource Economist	Socioeconomic Analysis
James Vogel	Recreation Planner	Recreation
Iris Mayes	Recreation Planner	Interpretation and Education
Anne Lienemann	Recreation Planner	Recreation
Brian Ludwig	Senior Archeologist	Cultural Resources
Richard Nichols	Range Management Specialist	Grazing Resources
Wendy Broadhead	Biologist	Vegetation, Riparian
John Hindley	Wildlife Biologist	Fish, Wildlife
Mark Winsor	Mineral Resources Specialist	Minerals, Renewable Energy
Kerry McWalters	Water Resources Specialist	Water Resources
Mark Greenig	Visual Resources Specialist	Visual Resources Management
Josh Hohn	Visual Resources Specialist	Visual Resources Management
Megan Gosch	GIS Specialist	GIS Mapping
Kevin Butterbaugh	Environmental Planner	Planning & NEPA Requirements, QA/QC
Ron LeValley	Mad River Biologists (Subconsultant)	Terrestrial Ecology, Botany and Wildlife Biology
John Russell	Adams-Russell Consulting (Subconsultant)	Socio-Cultural Analysis
Kate Foley	Advanced Resource Solutions, Inc. (Subconsultant)	OHV, Transportation
Bob Solari	Independent Contractor	Fire, Fuels Management

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6.3 LIST OF ACRONYMS

4WD	Four-Wheel Drive
ACEC	Area of Critical Environmental Concern
ADA	Americans with Disabilities Act
ADC	Animal Damage Control
AML	Abandoned Mine Lands
AMP	Animal Management Plan
APCD	Air Pollution Control District
APHIS	Animal and Plant Health Inspection Service
AQMD	Air Quality Management District
ARPA	Archaeological Resources Protection Ac
ATV	All-Terrain Vehicle
AUM	Animal Unit Month
BCC	Birds of Conservation Concern
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practices
BOR	Bureau of Reclamation

BP	Before Present
BRBNA	Blue Ridge Berryessa Natural Area Conservation Group
CAA	Clean Air Act
CARB	California Air Resources Board
CDF	California Department of Forestry and Fire Protection
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNPS	California Native Plant Society
CRMP	Coordinated Resource Management Plan
CWA	Clean Water Act
DMV	California Department of Motor Vehicles
DOE	U.S. Department of Energy
DPR	California Department of Parks and Recreation
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
FAR	Functional-At-Risk
FLPMA	Federal Land Policy and Management Act
FMP	Fire Management Plan
FMU	Fire Management Unit
GIS	Geographic Information System
GPS	Global Positioning System
GSP	Gross State Product
HA	Herd Area
HMA	Herd Management Area
IMBA	International Mountain Biking Association
IMP	Interim Management Plan
KGRA	Known Geothermal Resource Area
KOP	Key Observation Point
KTR	Key Travel Routes
LSR	Late Successional Reserve
MFP	Management Framework Plan
MMBF	Million Board Feet
MMH	Million Megawatt-Hour
MNBMC	Migratory Non-game Birds of Management Concern
MSA	Magnuson-Stevens Act
MW	Megawatt
NCPA	Northern California Power Agency
NEPA	National Environmental Policy Act
NSRE	National Survey on Recreation and the Environment
NHPA	National Historic Preservation Act

NMFS	National Marine Fisheries Service
NOA	Naturally Occurring Asbestos
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NREL	National Renewable Energy Laboratory
NRHP	National Register of Historic Places
NSRE	National Survey on Recreation and the Environment
NWFP	Northwest Forest Plan
NWSRS	National Wild and Scenic River System
NWTF	National Wild Turkey Federation
OHV	Off-Highway Vehicle
PA	Programmatic Agreement
PEIS	Wind Energy Development Program Environmental Impact Statement
PFC	Properly Functioning Condition
PIF	Partners in Flight
PILT	Payments in Lieu of Taxes
PRP	Potentially Responsible Party
QU	Quail Unlimited
RCRA	Resource Conservation and Recovery Act
RFA	Rural Fire Assistance Program
RFD	Reasonable Foreseeable Development
RMEF	Rocky Mountain Elk Foundation
RMIS	Recreation Management Information System
RMP	Resource Management Plan
RNA	Resource Natural Area
ROD	Record of Decision
ROMP	Responsible Organized Mountain Peddlers
ROS	Recreation Opportunity Spectrum
ROW	Right-of-Way
RWQCB	Regional Water Quality Control Board
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Officer
SOD	Sudden Oak Death
SR	State Route
SRMA	Special Recreation Management Areas
SWRCB	State Water Resources Control Board
T&E	Threatened and Endangered
TCP	Traditional Cultural Properties
TMDL	Total Maximum Daily Load
TOT	Transient Occupancy Tax
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USDI	U.S. Department of Interior
USFWS	U.S. Fish and Wildlife Service

USFS	U.S. Forest Service
USGS	U.S. Geological Survey
VMP	Vegetation Management Plan (CDF program)
VRM	Visual Resource Management
WSA	Wilderness Study Area
WUI	Wildland Urban Interface

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APPENDICES

APPENDIX A

MANAGEMENT PRESCRIPTIONS – CACHE CREEK COORDINATED RESOURCE MANAGEMENT PLAN (2004)

APPENDIX A

A.1 MANAGEMENT PRESCRIPTIONS – CACHE CREEK COORDINATED RESOURCE MANAGEMENT PLAN (2004)

A.1.1 Wildlife Habitat Management

The CCNA is comprised of a variety of natural habitats, some of which are more suitable for restoration, protection, or improvement than others.

Since the 1970's a variety of projects have been implemented within the CCNA. These have included brush-to-grass conversions, prescribed burns, water developments, irrigated pasture development, and noxious weed control, among others. Initial projects began in the late 1970's in chaparral habitat, before BLM and CDFG began acquiring sensitive oak woodland, meadow, and riparian habitats.

In recent years much work has been completed on CDFG and BLM land primarily in Zones A and E to reduce the spread of noxious weeds in key habitats, replacing these weeds with native species. Several water developments have also been completed in these areas. These types of projects have greatly benefited the tule elk population in Zone A particularly, as annual surveys confirm that elk numbers have approximately doubled within the past ten years. Monitoring of project areas by BLM and CDFG personnel has documented a significant increase of habitat use at these sites by elk. Undoubtedly these projects benefit many other game and nongame wildlife species as well.

The focus of BLM's wildlife habitat management program is to improve key habitat areas, especially those which have been degraded by past uses. Prescribed burning will continue to be used as a tool for treating dense overage chaparral habitat. The type of burns to be implemented here will prioritize those which maximize benefits to wildlife habitat, i.e. early season burns completed before January 31st each year. Burns to reduce the fuels build-up and reinforce firebreaks may be implemented in those areas closer to the urban interface, such as the Perkins Creek Ridge area east of the city of Clearlake. Burning will also be used as a tool in the battle against the spread of noxious weeds.

Noxious weed control in key habitats will be a top priority, especially on recent land acquisitions. The BLM has been mandated to control the spread of these weeds on public lands and will focus this effort where control is most likely to be effective in improving habitat conditions and beneficial to the needs of wildlife. Other control methods proposed include selective grazing, mowing, burning, reseeding with native vegetation, bio-control, and use of herbicides. A recently approved herbicide, clopyralid (Transline) has shown promising results in yellow starthistle control both as a pre-emergent and a post-emergent (DiTomaso 1999).

In recent years several water development projects have been completed. These have included the construction of wildlife guzzlers with tanks buried in the ground, and on recently-acquired lands, reconstruction of old breached livestock ponds that have been adapted to benefit wildlife.

Critical wildlife habitat within the CCNA is found in riparian and oak woodland/grassland habitats. Both Cache Creek and the North Fork are considered to be in Proper Functioning Condition (PFC) according to BLM's guidelines for evaluating the condition of riparian areas. There is not much habitat work

needed here, other than removal of noxious plants including scattered saltcedar, ravennagrass, and arundo. Bear Creek on the other hand has not attained PFC and is currently classified as Functioning At Risk (FAR), primarily due to the dominance of saltcedar and downcutting of the creek channel.

The Payne Ranch acquisition includes the most critical upland wildlife habitat within the CCNA. Extensive oak woodlands and meadow habitats are found between Cache Creek Ridge and Highway 16. This property was historically used for livestock grazing, consequently there are several dozen reservoirs scattered throughout the upland areas, which now serve to spread out habitat use for a variety of species including elk. The majority of the Cache Creek tule elk herd used this area until the early 1960's (McCullough 1969), then began to spread out onto adjacent BLM lands and neighboring private lands. Today about forty elk use the Payne Ranch acquisition year-round on a regular basis.

The occurrence of tule elk has drawn the interest of the Rocky Mountain Elk Foundation (RMEF) to this area. The RMEF has been a key partner in acquiring the Payne Ranch and other critical habitats, currently holding title to 1,678 acres of this recent acquisition. The BLM and the RMEF partnered on this acquisition to showcase habitat management for California's tule elk. While this property has serious problems with noxious weeds, the potential is there to restore important habitat found in meadows and riparian areas. Once serious efforts are made to control the spread of weeds which will take several years, elk use will likely increase.

Year-round upland water sources are found in the scattered livestock ponds. Some of these ponds are functioning as excellent riparian and aquatic habitats; others show the impact of improper design, past unrestricted grazing and lack of maintenance. Opportunities exist to improve habitat conditions at these ponds. Some will improve by a change in grazing management under BLM's Standards and Guidelines; others will benefit from the establishment of vegetation around the banks. A few ponds are in a state of disrepair and are eroding away, contributing to soils loss and severe channeling in areas. Some sites will require extensive work, including rebuilding the impoundments, adding spillways, and use of riprap to prevent further soils loss. Any proposed project work will be evaluated in a separate Environmental Assessment.

Changes in elk use patterns are anticipated to occur over the next several years due to changes in grazing management on the Payne Ranch acquisition. It has already been observed that since the expiration of the private grazing lease in June 2001, elk are utilizing much more of the habitat here. It may not be apparent for several years how the elk will respond in the long run to a change in grazing management, but during this interim period it is vital that extensive monitoring be undertaken to document changes in elk distribution and the location of any sensitive areas. With this thought in mind, public use will be slowly phased in only in those areas where conflicts with elk, or other resource values for that matter, do not occur. This could lead to seasonal closures of sensitive areas and re-routing of certain trails to avoid locations which are sensitive to disturbance year-round.

BLM recreation fee sites in existence prior to the signing of the Act will continue as fee sites. However, the Act specifically prohibits charging fees under certain circumstances, including charging fees for parking, picnicking, overlooks, general access, and dispersed areas with low or no investment. Additionally the Act prohibits charging fees for individuals under 16 years of age.

A new "America the Beautiful – National Parks and Federal Recreation Lands Pass" will be established to cover entrance fees and standard amenity recreation fees for all Federal recreation lands where a fee is charged. The multi-agency fee program is intended to reduce confusion over differing fee programs and passes. Existing National Park passes, Golden Eagle, Golden Age, and Golden Access passes will continue to be valid until they expire.

There are opportunities for public involvement in determining new recreation fee sites and fee schedules, such as the Resource Advisory Councils (RACs) and the Recreation Resource Advisory Committees (RRACs), the latter to be established in 2005. Advance notice of a new fee area will be made in the Federal Register at least six months prior to establishment of the fee. Notice of a new fee or a change to an existing fee will be made in local newspapers and publications located near the site where a new fee would be established or changed.

A.1.2 Bibliography

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APPENDIX B

EXISTING MINERAL WITHDRAWALS – SOLID AND FLUID MINERALS

APPENDIX B

B.1 EXISTING MINERAL WITHDRAWALS – SOLID AND FLUID MINERALS

B.1.1 Introduction

A withdrawal is a formal action that sets aside, withholds, or reserves Federal lands by administrative order or statute for public purposes. The effect of a withdrawal is to accomplish one or more of the following:

- Segregates (closes) Federal land to the operation of all or some of the public land laws and/or mineral laws.
- Transfer total or partial jurisdiction of Federal between Federal agencies.
- Dedicates Federal land for a specific purpose.

Withdrawals can be categorized into two major types including:

- Congressional -legislative withdrawals made by C ongress in the form of public laws. Examples include designation for wild and scenic rivers, wilderness areas, recreation areas, and power site reserves.
- Administrative -withdrawals made by the President, Secretary of Interior, or other officers of the executive branch of the Federal Government. Examples include public water reserves, reclamation withdrawals, power site classifications, and administrative site withdrawals.

Table B-1 summarizes the specific types of withdrawals and acres of public lands withdrawn in each type of withdrawal. It should be noted that many of these withdrawals overlap so the total number of acres withdrawn is less than the sum of the acres shown in Table B-1. The table and figure do not include withdrawals of National Forest System lands (other than administrative sites outside forest boundaries).

TABLE B-1: EXISTING MINERAL WITHDRAWALS – UKIAH FIELD OFFICE

TYPE OF WITHDRAWAL	BLM ACRES WITHDRAWN
BLM Recreation Sites	669
National Cooperative Land & Wildlife Management Area	112,088
Public Water Reserves	95
Cow Mountain Recreation Withdrawal	44,823
USFS Administrative Site	160
Power Site Reserves and Classifications	5,123
Reclamation Classification and Withdrawals	2,630
Indian Reservations	1,010
Lighthouse Purposes	19
Recreation & Public Purpose Classification	760
Total Acreage	117,377

BLM Administrative Sites: These include several administrative withdrawals for Kowalski, Mayacmas, Willow Creek, Red Mountain, and Sheldon Creek Recreation sites. All of these sites are withdrawn from surface disposal and mining, but not from mineral leasing.

National Cooperative Land & Wildlife Management Areas: This withdrew public lands from application under the non-mineral public land laws and from disposition under the homestead, desert land and scrip selection laws, to be managed by the Bureau of Land Management for the development, conservation, utilization and maintenance of their resources, including their recreational and wildlife resources. The Homestead Act and the script selection laws were repealed in 1976 with the passage of the Federal Land Policy and Management Act.

Public Water Reserves: Reserves Public Lands for Public Water uses and segregated them from the public land laws.

Cow Mountain Recreational Withdrawal: The Congress of the United States withdrew Cow Mountain from settlement, location, sale and entry under the public land laws for recreational purposes, for preserving the right of the public to hunt and fish there on and securing favorable conditions of water flows.

USFS Administrative Site: The Congress of the United States withdrew public lands from settlement, location, sale, or entry and reserved use by the Forest Service as a ranger station in the administration of the National Forest.

Power Site Reserves and Classifications: There are numerous powersite reserves and classification within the planning area. These are administrative withdrawals that protect water/power development. Generally speaking, these sites are withdrawn from surface disposal only.

Reclamation Projects: There is one reclamation withdrawal for the Central Valley reclamation project, five separate withdrawals for the Orland Reclamation project and four separate withdrawals for the Solano Reclamation project. The lands were withdrawn from surface disposal and mining, but not from the mineral leasing laws.

Indian Reservations: Lands were withdrawn from all forms of settlement for use of the Hopland band of Indians and the Manchester Band of Pomo Indians for use of living thereon.

Lighthouse Purposes: Withdrew lands for Lighthouse purposes on the Pacific Coast to aid in Navigation.

It should be noted that BLM land classifications are not formal withdrawals, they are considered "de facto" withdrawals since most lands also segregate public the lands from the operation of all or some of the public land laws and/or mineral laws. A BLM classification accomplishes one of the following:

- Determine if BLM lands are suitable for certain types of entry (disposal or lease) under public land laws (e.g. Recreation and Public Purpose Act).
- Determine if BLM lands are suitable for retention for multiple use management.

Historically, much of the much of the planning area was under classification for retention for multiple use pursuant to the Classification and Multiple Use (C&MU) Act of 1964. With the passage of FLPMA

in 1976 and its direction that BLM lands generally be retained in public ownership, these C&MU classifications within the planning area were deemed unnecessary and were terminated.

There are two classifications currently on public lands within the planning area. They are classifications that with drew lands for either lease and/or Patent under the Recreation and Public Purpose Act, as amended. The lands were segregated forms of appropriation form the public lands laws, including the mining laws, but not the mineral leasing laws.

B.1.2 Withdrawals

PLO 2693
Dated June 7, 1962
National Cooperative Land and Wildlife Management Areas.
Approximately 112,088 acres of land were withdrawn from application under the non-mineral public land laws and from disposition under the desert lands laws and to be managed by the Bureau of Land Management for the development, conservation, utilization and maintenance of their natural resources, including their recreational and wildlife resources.

EO 8/11/1916
COW MOUNTIAN WITHDRAWAL
The Congress of the United States withdrew approximately 44,823 acres of public lands on Cow Mountain from settlement, location, sale and entry under the public land laws for recreational purposes, for preserving the right of the public to hunt and fish there on and securing favorable conditions of water flows.

PLO 6627
Dated March 26, 1990
Withdrawal for an Administrative Site
Fifteen acres of Land were withdrawn from appropriation under the mining laws but not the Mineral leasing laws for a recreation site on Indian Valley Reservoir.

PLO 4925
Dated 10/19/1970
Withdrawal for an Administrative Site
Public Land Order dated 10/19/1970 withdrew 654 acres for protection of public recreation sites at Mayacmas, Willow Creek, Red Mountain, and Sheldon Creek Recreation sites. All of sites are withdrawn from surface disposal and mining, but not from mineral leasing.

PLO 6073
BLM O 1/10/1963
Interpretation Public Water Reserve 107 Reserves
Public Land Order/BLM O 1/10/1963 withdrew 75 acres Public Lands for Public Water uses and segregated them from the public land laws.

BLM O 5/26/1981
Interpretation Public Water Reserve 107

BLM Order dated 5/26/1981 withdrew 20 acres Public Lands for Public Water uses and segregated them from the public land laws.

SO 6/18/1907
Withdrawal Hopland Indian Reservation
Secretarial Order dated 6/18/1907 withdrew approximately 1006 acres of Public Lands from all forms of settlement for use of the Hopland Band of Indians for use of living thereon.

ACT OF CONGRESS 5/9/1942
Withdrawal Manchester Band of Pomo Indians
The Act of Congress dated 5/9/1942 withdrew approximately 4 acres of Public Lands from all forms of settlement for use of the Manchester Band of Pomo Indians for use of living thereon.

EO 6/8/1942
Withdrawal for Lighthouse Purposes
EO 6/8/1942 withdrew 19 acres of public lands for Lighthouse purposes on the Pacific Coast to aid in Navigation.

EO 1325
Dated 3/29/1911
USFS Administrative Site
The Congress of the United States withdrew 160 acres of public lands from settlement, location, sale, or entry and reserved use by the Forest Service as a ranger station in the administration of the National Forest.

EO 5/19/1913
Withdrawal Power Site Reserve 365
The Congress of the United State withdrew 1,039 acres to protect for water/power development and withdrew the surface from disposal only.

EO 10/30/1916
Withdrawal Power Site Reserve 560
The Congress of the United State withdrew 933 acres to protect for water/power development and withdrew the surface from disposal only.

EO 8/11/1916
Withdrawal Power Site Reserve 538
The Congress of the United State withdrew 1,478 acres to protect for water/power development and withdrew the surface from disposal only.

USGS 0 4/22/1948 (CA 7663 WR)
Withdrawal Power Site Classification 391
The US Geological Survey withdrew 755 acres to protect for water/power development and withdrew the surface from disposal only.
USGS 04/21/1958
Withdrawal Power Site Classification 444

The US Geological Survey withdrew 755 acres to protect for water/power development and withdrew the surface from disposal only.

PLO 4838
Dated 6/1/1970
Central Valley Reclamation Project
Public Land Order 4838 withdrew for the Central Valley reclamation project, 876 acres of Public Land. The lands were withdrawn from surface disposal and mining, but not from the mineral leasing laws.

PLO 3627
Dated 4/9/1965
Withdrawal Orland Reclamation Project
Public Land Order 3627 withdrew for the Central Valley reclamation project, 40 acres of Public Lands. The lands were withdrawn from surface disposal and mining, but not from the mineral leasing laws.

PLO 4652
Dated 4/18/1969
Withdrawal Orland Reclamation Project
Public Land Order 4652 withdrew for the Orland reclamation project, 80 acres of Public Lands. The lands were withdrawn from surface disposal and mining, but not from the mineral leasing laws.

SO 12/28/1908
Withdrawal Orland Reclamation Project
Secretarial Order dated 12/28/1908, withdrew for the Orland reclamation project, 160 acres of Public Lands. The lands were withdrawn from surface disposal and mining, but not from the mineral leasing laws.

SO 6/16/1909
Withdrawal Orland Reclamation Project
Secretarial Order dated 6/16/1909, withdrew for the Orland reclamation project, 120 acres of Public Lands. The lands were withdrawn from surface disposal and mining, but not from the mineral leasing laws.

SO 11/16/1917
Withdrawal Orland Reclamation Project
Secretarial Order dated 11/16/1917, withdrew for the Orland reclamation project, 80 acres of Public Lands. The lands were withdrawn from surface disposal and mining, but not from the mineral leasing laws.

BLM O 10/2/1947
Withdrawal Yolo Solano Reclamation Project
BLM Order dated 10/2/1947, withdrew for the Yolo/Solano reclamation project, 970 acres of Public Lands. The lands were withdrawn from surface disposal and mining, but not from the mineral leasing laws.

BLM O 2/27/1952 (CACA 7075 WR)
Withdrawal Solano Reclamation Project

BLM Order dated 2/27/1952, withdrew for the Solano reclamation project, 1,153 acres of Public Lands. The lands were withdrawn from surface disposal and mining, but not from the mineral leasing laws.

PLO 2706
Dated June 15, 1962
Withdrawal Solano Reclamation Project
Public Land Order 4652, withdrew for the Solano reclamation project, 40 acres of Public Lands. The lands were withdrawn from surface disposal and mining, but not from the mineral leasing laws.

CA 414 C
BLM Order Classification Recreation & Public Purpose
BLM Order Classification Recreation & Public Purpose withdrew 40 acres of Public Lands for Recreation and Public Purposes. The lands were withdrawn from the Public land laws and mining laws, but not from the mineral leasing laws.

CA 43408 CL
BLM Order Classification Recreation & Public Purpose
BLM Order Classification Recreation & Public Purpose withdrew 720 acres of Public Lands for Recreation and Public Purposes. The lands were withdrawn from the Public land laws and mining laws, but not from the mineral leasing laws.

APPENDIX C

MANAGEMENT OF LANDS WITH WILDERNESS CHARACTERISTICS

APPENDIX C

C.1 MANAGEMENT OF LANDS WITH WILDERNESS CHARACTERISTICS

C.1.1 MANAGEMENT DIRECTION

Management of lands having wilderness characteristics is part of BLM's multiple-use mandate, and is recognized within the spectrum of resource values and uses. Public lands having wilderness characteristics generally:

- Have been affected primarily by the forces of nature, with the imprint of humans substantially unnoticeable,
- Have outstanding opportunities for solitude or a primitive and unconfined type of recreation,
- Have at least five thousand acres of land or of sufficient size as to make practicable its preservation and use in unimpaired condition, and
- Have supplemental wilderness values potentially containing ecological, geological, or other features of scientific, educational, scenic, or historical value.

Public lands having wilderness characteristics may be managed to protect one or more of these values.

With exceptions, the following activities generally would not occur within lands being managed to protect wilderness characteristics:

- Commercial enterprises
- Roads
- Use of motor vehicles, motorized equipment, and motorboats
- Landing of aircraft
- Construction and placement of structures and installations

However, there are some exceptions to these prohibitions. These exceptions are generally grouped into the following three categories.

- **Valid Existing Rights**. Prior-existing rights may continue. New discretionary uses that create valid existing rights are not allowed unless they meet the needs under the monument proclamation and they enhance one or more of the wilderness characteristics.
- **Administrative Activities**. New commercial activities or new roads will not be authorized unless consistent with the monument proclamation. BLM may authorize any of the other prohibitions if it is necessary to protect one or more of the wilderness characteristics and/or are necessary to protect the health and safety of persons within the area.
- **Other General Allowances**. Subject to limitations determined by the State Director, general allowances could include: actions necessary to control fire insects, and diseases; recurring Federal mineral surveys; establishing livestock grazing; commercial services to the extent necessary for

activities that are proper for realizing the recreational or other wilderness character purposes and compatible with the defined values; and adequate access to inholdings.

C.1.1.1 Specific Guidance

1. **Emergencies**. The use of motor vehicles and mechanical transport, and the construction of temporary roads, structures, and installations is allowed for emergency purposes and when consistent with the management principles of the monument and if it is necessary to protect one or more of the wilderness characteristics and/or the health and safety of persons within the area.
2. **Land Disposals, Rights-of-Ways, Use Authorizations**. These lands will be retained in public ownership. Prior existing rights, such as leases under the Recreation and Public Purposes Act, leases/permits under 43 CFR 2920, and rights-of-ways (ROWs) may continue. These also could be renewed if they are still being used for their authorized purpose. New authorizations, leases, permit, and ROWs will not be authorized since they are considered new valid rights, with the possible exception uses needed for health and human safety.
3. **Routes of Travel**: The construction of new permanent roads will not be allowed. New temporary roads could be allowed if the BLM determines it is necessary to protect one or more of the wilderness characteristics and/or to protect the health and safety of persons within the area or if necessary to control fire, insects, and diseases.
4. **Fire Management**: Fire management will be consistent with Bureau policy. New fire management structures are allowed if it is necessary to protect one or more of the wilderness characteristics and/or are necessary to protect the health and safety of persons within the area.
5. **Vegetation Health**: Insects, disease, and invasive species may be controlled if determined that if it is necessary to protect one or more of the wilderness characteristics and/or are necessary to protect the health and safety of persons within the area. Insect and disease outbreaks should not be artificially controlled, except to protect other valuable resources. Vegetative manipulation to control noxious, exotic, or invasive species is allowed when there is no effective alternative and when the control is necessary to maintain the natural ecological balances within the area. Control may include manual, chemical, and biological treatment provided it will not cause adverse impacts to the wilderness characteristics.
6. **Recreation:** Primitive and unconfined recreational uses such as hiking, camping, rock climbing, caving, fishing, hunting, trapping, etc. are allowed to continue on lands having wilderness characteristics so long as they are consistent with the management objectives within this plan.. Recreational uses should not be allowed if they require:

    - Motor vehicles or mechanical transport (e.g, mountain bikes) off routes designated as open or limited as designated through the route designation process.
    - The use of motorboats.
    - Permanent structures or installations (other than tents, tarpaulins, temporary corrals, and similar devices for overnight camping).

    New commercial services will not be allowed unless they are necessary for realizing the primitive and unconfined recreational values. An example of an allowed commercial service would be an outfitting and guide service. Existing commercial recreational authorizations may be allowed to

continue under its terms and conditions to their expiration date. Recreational or hobby collecting of mineral specimens when conducted without location of a mining claim may be allowed. This use will be limited to hand collection and detection equipment.

7. **Cultural and Paleontological Resources:** Cultural and paleontological resources are recognized as unique and valuable. They are also important supplemental values to an area's wilderness character. Resource inventories, studies, and research involving surface examination may be permitted if it benefits wilderness values. This same standard applies for the salvage of archeological and paleontological sites; rehabilitation, stabilization, reconstruction, and restoration work on historic structures; excavations; and extensive surface collection may also be permitted for a specific project. Permanent physical protection, such as fences, will be limited to those measures needed to protect resources eligible for the National Register of Historic Places and will be constructed so as to minimize impacts on apparent naturalness.

8. **Wildlife Management:** Fish and wildlife resources are a special feature that may contribute to an area's wilderness character. Whenever possible, these resources should be managed to maintain that character. Nothing will be construed as affecting the jurisdiction or responsibilities of the State agencies with respect to fish and wildlife management on these lands. Fishing, hunting and trapping are legitimate activities on these lands. The State establishes regulations and enforcement for these uses. State wildlife agencies and the BLM are responsible for fostering a mutual understanding and cooperation in the management of fish and wildlife. Management activities on these lands will emphasize the protection of natural processes. Management activities will be guided by the principle that the project can be accomplished if it is necessary to protect one or more of the wilderness characteristics and/or are necessary to protect the health and safety of persons within the area. Management of public lands having wilderness character should follow the guidelines provided in the Memorandum of Understanding between the BLM and the International Association of Fish and Wildlife Agencies. It will also follow any additional site-specific wildlife decisions addressed through the land use planning process.

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APPENDIX D

WILD AND SCENIC RIVER ELIGILITY AND SUITIBLITY STUDY

APPENDIX D

D.1 WILD AND SCENIC RIVER ELIGIBILITY AND SUITABILITY STUDY

D.1.1 Wild and Scenic River System

The Wild and Scenic Rivers Act of 1968 (Public Law 90-542) was passed by Congress to preserve river systems that contain outstanding features. The law was enacted during an era when many rivers were being dammed or diverted, and is intended to balance this development by ensuring that certain rivers and streams remain in their free-flowing condition. The BLM is mandated to evaluate stream segments on public lands as potential additions to the National Wild and Scenic Rivers System (NWSRS) during the Resource Management Plan (RMP) Process under Section 5(d) of the Act. The NWSRS study guidelines are found in BLM Manual 8351, U.S. Departments of Agriculture and Interior Guidelines published in Federal Register Vol. 7, No.173, September 7, 1982 and in various BLM memoranda and policy statements. Formal designation as a Wild and Scenic River requires Congressional Legislation, or designation can be approved by the Secretary of Interior if nominated by the Governor of the state containing the river segment. The following discussion provides information on how BLM considered waterways for potential inclusion in the NWSRS.

The NWSRS study process has three distinct steps:

- Determine what rivers or river segments are eligible for NWSRS designation;
- Determine the potential classification of eligible river segments as wild, scenic, recreational or any combination thereof; and
- Conduct a suitability study to determine if the river segments are suitable for designation as components of the NWSRS.

This report documents all three steps of the process for the streams in the planning area.

D.1.2 Eligibility of Ukiah Field Office Streams

D.1.2.1 Identification

A variety of sources were reviewed to identify waterways which could have potential for wild and scenic river designation. They include the Nationwide Rivers Inventory List, the Outstanding Rivers List compiled by American Rivers, Inc., river segments identified in the riparian inventory (1999), and river segments identified by the planning team as having potential to meet Wild and Scenic River eligibility requirements.

The Wild and Scenic Rivers Act defines a river as a "flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes."

Ninety-five stream segments totaling two hundred forty-eight (does not include acquisitions after 9/17/99– Payne Ranch, Stornetta, etc.) miles within or immediately adjacent BLM lands were identified for review. Some streams were divided into segments, based on land status, or

classification criteria (see paragraph on classification). These rivers are listed in Table D-1: Wild & Scenic River Inventory, and shown on Figure 2-12, Chapter 2 of this RMP/EIS.

D.1.3 Eligibility Determination

Each identified river segment was evaluated to determine whether it is eligible for inclusion in the NWSRS. To be eligible, a river segment must be "free flowing" and must possess at least one "outstandingly remarkable value" (ORV). These ORVs include the following values:

- Scenic
- Recreational
- Geological
- Fish
- Wildlife
- Historical
- Cultural
- Ecologica
- Riparian
- Botanical
- Hydrological
- Scientific

To be considered as "outstandingly remarkable," a river related value must be a unique, rare, or exemplary feature that is significant at a comparative regional or national scale. Only one such value is needed for eligibility. All values should be directly river related, meaning they should:

- Be located in the river or on its immediate shorelands (generally within ¼ mile on either side of the river);
- Contribute substantially to the functioning of the river ecosystem; and/or
- Owe their location or existence to the presence of the river.

These are the only factors considered in determining the eligibility of a river segment. All other relevant factors are considered in determining suitability. A river need not be navigable by watercraft to be eligible. For purposes of eligibility determination, the volume of flow is sufficient if it is enough to maintain the outstandingly remarkable value(s) identified within the segment.

Topography of the areas vary from coastal properties to inland coast ranges of rolling grasslands. Average annual rainfall of contributes to the abundance of rivers and streams that are integral to the values of the area. The stream systems can be generally categorized into two groups based on their geology and other watershed characteristics:

Table D-1 summarizes the eligibility evaluation of all identified river segments. The table includes information on the length of stream segments studied, BLM acreage (including a ¼ mile corridor on either side of the stream), indicates if outstandingly remarkable value(s) are present, and identifies the potential classification of each eligible segment.

D.1.4 Classification

The Wild and Scenic Rivers Act and subsequent interagency guidelines provide the following direction for establishing preliminary classifications for eligible rivers:

- **Wild Rivers:** Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- **Scenic Rivers:** Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
- **Recreational Rivers:** Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

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TABLE D-1: Wild and Scenic River Inventory

RIVER NAME /SEGMENT	REASON FOR CONSIDERATION (1)	BLM LENGTH (MILES)	OTHER LENGTH (MILES)	FREE FLOWING	ORV (2)	ELIGIBILITY	PRELIMINARY CLASSIFICATION	BLM ACRES	PERCENT OF CORRIDOR (%)
Austin Creek (Dispersed)	C	0.75		Yes	E, H	Eligible	Scenic		
Barltett Creek Indian Valley)	C	1.5		Yes	B, C, E	Eligible	Scenic		
Bean Canyon (Indian Valley)	C	1.75		Yes	A	Noneligible			
Bear Canyon (Geysers)	C	0.25		Yes	A	Noneligible			
Bear Creek (Cache Creek)	C	8.5		Yes	A	Noneligible			
Benmore Creek (CacheCreek)	C	1.5		Yes	A	Noneligible			
Benmore Creek (South Cow Mountain)	C	5.0		Yes	A	Noneligible			
Black Oak Springs Creek (South Cow Mountain)	C	1.0		Yes	A	Noneligible			
Brophy Canyon (Cache Creek)	C	4.5		Yes	A	Noneligible			
Brushy Canyon (Cache Creek)	C	1.75		Yes	A	Noneligible			
Cache Creek (Cache Creek)	C	13.25		Yes	C, F, G	Eligible	Recreation, Wild		
Cache Creek, Above Res.	C	3.25		Yes	B, E, H	Eligible	Scenic		
Cache Creek, North Fork Below Res.	C	1.65		Yes	E, F	Eligible	Scenic		
Carrier Creek (Lodoga)	C	0.75		Yes	A	Noneligible			
Cedar Creek (Knoxville)	C	3.25		Yes	A	Noneligible			
Cement Creek (Knoxville)	C	2.5		Yes	A	Noneligible			
Cold Creek (North Cow Mountain)	C	0.9		Yes	A	Noneligible			
Coleman Creek	C	1.5		Yes	A	Noneligible			

RIVER NAME /SEGMENT	REASON FOR CONSIDERATION (1)	BLM LENGTH (MILES)	OTHER LENGTH (MILES)	FREE FLOWING	ORV (2)	ELIGIBILITY	PRELIMINARY CLASSIFICATION	BLM ACRES	PERCENT OF CORRIDOR (%)
(Geysers)									
Complexion Creek (Indian Valley)	C	0.75		Yes	A	Noneligible			
Crack Canyon (Cache Creek)	C	2.0		Yes	A	Noneligible			
Craig Canyon (Cache Creek)	C	1.5		Yes	A	Noneligible			
Davis Creek (Cache Creek)	C	9.5		Yes	A	Noneligible			
Deadman Canyon (Cache Creek)	C	2.75		Yes	A	Noneligible			
Doyle Canyon (Cache Creek)	C	1.25		Yes	A	Noneligible			
Dorr Creek (Lodoga)	C	1.5		Yes	A	Noneligible			
Dry Creek (Grapevine)	C	0.5		Yes	A	Noneligible			
Dyer Creek (Knoxville)	C	0.75		Yes	A	Noneligible			
East Fork Sulphur Creek (Indian Valley)	C	1.75		Yes	A	Noneligible			
Eggman Canyon (Lodoga)	C	2.0		Yes	A	Noneligible			
Feliz Creek (Lodoga)	C	0.5		Yes	A	Noneligible			
Fiske Creek (Cache Creek)	C	6.0		Yes	A	Noneligible			
Four Point Canyon (Geysers)	C	1.75		Yes	A	Noneligible			
Gosling Creek (Lodoga)	C	1.0		Yes	A	Noneligible			
Grapevine (Indian Valley)	C	0.5		Yes	A	Noneligible			
Gut Creek (West of 101)	C	2.0		Yes	A	Noneligible			
Hayes Creek (Lodoga)	C	0.75		Yes	A	Noneligible			
Harley Gulch (Cache Creek)	C	2.5		Yes	A	Noneligible			
Hole Creek (Knoxville)	C	2.5		Yes	A	Noneligible			
Howard Creek (North	C	17.5		Yes	A	Noneligible			

RIVER NAME /SEGMENT	REASON FOR CONSIDERATION (1)	BLM LENGTH (MILES)	OTHER LENGTH (MILES)	FREE FLOWING	ORV (2)	ELIGIBILITY	PRELIMINARY CLASSIFICATION	BLM ACRES	PERCENT OF CORRIDOR (%)
Cow Mountain)									
Howell Creek (South Cow Mountain)	C	0.25		Yes	A	Noneligible			
Hunting Creek (Knoxville)	C	6.0		Yes	E, H	Eligible	Scenic		
Indian Creek (Cache Creek)	C	2.0		Yes	A	Noneligible			
Indian Creek (West of 101)	C	5.6		Yes	A	Noneligible			
Ingalls Creek (Geysers)	C	0.2		Yes	A	Noneligible			
Jack Canyon (Cache Creek)	C	2.0		Yes	A	Noneligible			
Jakes Creek (Geysers)	C	1.25		Yes	A	Noneligible			
Jericho Creek (Knoxville)	C	1.5		Yes	A	Noneligible			
Judge Davis (Cache Creek)	C	3.0		Yes	A	Noneligible			
Long Canyon (Indian Valley)	C	4.0		Yes	A	Noneligible			
Lyons Creek (South Cow Mountain)	C	1.5		Yes	A	Noneligible			
Maxwell Creek (Berryessa)	C	0.2		Yes	A	Noneligible			
McClure Creek (North Cow Mountain)	C	9.75		Yes	A	Noneligible			
McDowell Creek (Geysers)	C	0.6		Yes	A	Noneligible			
Mill Creek (Indian Valley)	C	5.0		Yes	B, G	Eligible	Scenic		
Morrison Creek (South Cow Mountain)	C	7.0		Yes	A	Noneligible			
Nevada Creek (Dispersed)	C	0.75		Yes	A	Noneligible			
North Fork Elk Creek	C	0.25		Yes	A	Noneligible			

RIVER NAME /SEGMENT	REASON FOR CONSIDERATION (1)	BLM LENGTH (MILES)	OTHER LENGTH (MILES)	FREE FLOWING	ORV (2)	ELIGIBILITY	PRELIMINARY CLASSIFICATION	BLM ACRES	PERCENT OF CORRIDOR (%)
(Lodoga)									
North Fork Mill Creek (North Cow Mountain)	C	5.25		Yes	A	Noneligible			
No Name (North Cow Mountain)	C	1.5		Yes	A	Noneligible			
No Name (Cache Creek)	C	1.0		Yes	A	Noneligible			
No Name (Indian Valley)	C	2.0		Yes	A	Noneligible			
No Name (Indian Valley)	C	1.0		Yes	A	Noneligible			
Panther Creek (South Cow Mountain)	C	3.0		Yes	A	Noneligible			
Perkins Creek (Cache Creek)	C	3.5		Yes	A	Noneligible			
Petrified Canyon (Cache Creek)	C	2.75		Yes	A	Noneligible			
Pocock Creek (Knoxville)	C	2.25		Yes	A	Noneligible			
Pope Creek (Berryessa)	C	0.75		Yes	A	Noneligible			
Portuguese Canyon (Berryessa)	C	1.0		Yes	A	Noneligible			
Quartz Canyon (Indian Valley)	C	2.25		Yes	A	Noneligible			
Rail Canyon Creek (Lodoga)	C	1.0		Yes	A	Noneligible			
Red Mountain (Berryessa)	C	0.25		Yes	A	Noneligible			
Red Slide Creek (Dispersed)	C	0.5		Yes	A	Noneligible			
Rena Canyon (Lodoga)	C	0.5		Yes	A	Noneligible			
Robinson Creek (West of 101)	C	0.75		Yes	A	Noneligible			
Rocky Creek (Cache Creek)	C	5.75		Yes	A	Noneligible			

RIVER NAME /SEGMENT	REASON FOR CONSIDERATION (1)	BLM LENGTH (MILES)	OTHER LENGTH (MILES)	FREE FLOWING	ORV (2)	ELIGIBILITY	PRELIMINARY CLASSIFICATION	BLM ACRES	PERCENT OF CORRIDOR (%)
Rumsey Creek (Cache Creek)	C	2.5		Yes	A	Noneligible			
Scotts Creek (South Cow Mountain)	C	15.0		Yes	B, E, G	Eligible	Scenic		
Scotties Canyon (Lodoga)	C	0.25		Yes	A	Noneligible			
Sheldon Creek (South Cow Mountain)	C	1.0		Yes	A	Noneligible			
South Fork Salt Creek (Dispersed)	C	0.25		Yes	A	Noneligible			
South Fork Scotts Creek (South Cow Mountain)	C	3.0		Yes	B, E, G	Eligible	Scenic		
Stanton Creek (Indian Valley)	C	2.5		Yes	B, H	Eligible	Scenic		
Sugar Loaf Peak (Berryessa)	C	0.75		Yes	A	Noneligible			
Sulphur Creek (North Cow Mountain)	C	8.75		Yes	A	Noneligible			
Sulphur Creek South Fork (Geysers)	C	2.0		Yes	B, F	Eligible	Scenic		
Thompson Canyon (Cache Creek)	C	9.0		Yes	A	Noneligible			
Trout Creek (Berryessa)	C	2.5		Yes	A	Noneligible			
Trout Creek (Cache Creek)	C	1.75		Yes	A	Noneligible			
Upper Big River (West of 101)	C	0.30		Yes	A	Noneligible			
Upper Mill Creek (West of 101)	C	0.25		Yes	A	Noneligible			
Vasser Creek (Geysers)	C	2.25		Yes	A	Noneligible			
Wild Horse Canyon (Berryessa)	C	2.0		Yes	A	Noneligible			
Willow Creek East (South Cow Mountain)	C	7.0		Yes	A	Noneligible			

RIVER NAME /SEGMENT	REASON FOR CONSIDERATION (1)	BLM LENGTH (MILES)	OTHER LENGTH (MILES)	FREE FLOWING	ORV (2)	ELIGIBILITY	PRELIMINARY CLASSIFICATION	BLM ACRES	PERCENT OF CORRIDOR (%)
Willow Creek West (North Cow Mountain)	C	1.5		Yes	A	Noneligible			
Wolf Creek	C	1.5		Yes	B, C, E, G	Eligible	Scenic		

(1) A- National Rivers Inventory
B- 1988 Outstanding Rivers List, American Rivers, Inc.
C- Potential eligible river inventory, UKFO Planning Team
D- Other

(2) A- Non-existent
B- Scenic
C- Recreational
D- Geological
E- Fish and Wildlife
F- Historical or Cultural
G- Riparian
H- Other (Ecological, Botanical, Hydrological)

(3) Shoreline and adjacent lands within ¼ mile of the river segment not to exceed 320 acres per mile measured from the ordinary high water mark on both sides of the river

D.1.5 Suitability of Streams

Segments displayed in Table D-1 were found to be eligible for inclusion into the NWSRS. Section 4(a) of the Wild and Scenic River Act mandates that all rivers found eligible as potential additions to the NWSRS be studied as to their suitability for such a designation. The purpose of the suitability study is to provide information upon which the President of the United States can base his recommendation and Congress can make a decision. The study report describes the characteristics that do or do not make the stream segment a worthy addition to the system, the current status of land ownership and use in the area, the reasonably foreseeable potential uses of the land and water which would be enhanced, foreclosed, or curtailed if the area were included in the system, and several other factors. The suitability study is designed to answer these questions:

- Should the river's free–flowing character, water quality, and outstandingly remarkable values (ORV) be protected, or are one or more other uses important enough to warrant doing otherwise?
- Will the river's free-flowing character, water quality, and ORVs be protected through designation? Is it the best method for protecting the river corridor? (In answering these questions, the benefits and impacts of wild and scenic river designation must be evaluated, and alternative protection methods considered.)
- Is there a demonstrated commitment to protect the river by any nonfederal entities that may be partially responsible for implementing protective management?

Pursuant to Sections 4(a) and 5(c) of the Wild and Scenic Rivers Act, the following factors were considered and evaluated as a basis for the suitability determination for each river.

- Characteristics that do or do not make the area a worthy addition to the NWSRS.
- The current status of land ownership, minerals (surface and subsurface), and use in the area, including the amount of private land involved and associated or incompatible uses.
- The reasonably foreseeable potential uses of the land and water that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS. Historical or existing rights which could be adversely affected.
- The federal agency that will administer the area should it be added to the NWSRS.
- The estimated cost to the United States of acquiring necessary lands and interests in lands and of administering the area should it be added to the NWSRS.
- A determination of the degree to which the state or its political subdivisions might participate in the preservation and administration of the river should it be proposed for inclusion in the NWSRS.
- An evaluation of the adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development.
- Federal, public, state, local, or other interests in designation or non-designation of the river, including the extent to which the administrator of the river, including the cost thereof, may be shared by state, local, or other agencies and individuals. Support or opposition to the designation.

- The consistency of designation with other agency plans, programs or policies and in meeting regional objectives.
- The contribution to river system or basin integrity.
- The ability of BLM to manage the river segments under designation, or ability to protect the river area other than Wild and Scenic designation.
- The potential for water resources development.

APPENDIX E

PROPOSED SUPPLEMENTARY RULES FOR THE STORNETTA MANAGEMENT AREA

APPENDIX E

E.1 PROPOSED SUPPLEMENTARY RULES FOR THE STORNETTA MANAGEMENT AREA

Use restrictions for the Stornetta ACEC would include:

- Prohibit the discharge or use of fireworks, firearms or other weapons, including: bows and arrows, pellet guns, paintball guns.
- Prohibit hang gliding.
- Prohibit overnight camping.
- Designate the area as Day Use Only and prohibit occupancy from one-half hour after sunset to one-half hour before sunrise.
- Prohibit the use of motorized vehicles, excluding wheelchairs.
- Prohibit climbing on cliffs and in or around sink holes.
- Require that dogs be on a leash no longer than six feet or otherwise physically restricted at all times.
- Prohibit open fires.
- Prohibit cutting or collecting firewood.
- Prohibit feeding or harassing wildlife.
- Physical removal of any resources which includes but is not limited to flora and fauna, driftwood, and shells.

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APPENDIX F

REASONABLE FORESEEABLE DEVELOPMENT SCENARIO – OIL AND GAS RESOURCES

APPENDIX F

F.1 REASONABLY FORESEEABLE DEVELOPMENT SCENARIO – OIL AND GAS RESOURCES

F.1.1 Summary

Based on an analysis of past oil and gas related activities within the boundaries of the Ukiah Field Office and the very small amount of federal mineral estate within areas of high development potential, we project that oil and gas activities on federal mineral estate within the Ukiah Field Office area boundary will continue at a relatively minimal level. Overall, within the next 15-20 years, we project total surface disturbance due to all oil and gas activities on federal mineral estate to be no more than 61 acres. This estimate includes geophysical exploration (seismic), 5 exploration wells, 4 development wells and associated facilities, roads, and a gas transmission pipeline that could be linked to existing gas transmission lines within the area. Nearly half of this disturbance, 26 acres, will be temporary, and would be mostly to totally reclaimed within a few months to a couple of years. Over the long term, both new and existing oil and gas related activities would eventually be abandoned, the lands would be reclaimed, and the sites would be restored to as near a natural condition as practical.

F.1.2 Introduction

This appendix describes the scenario for the Reasonably Foreseeable Development (RFD) of oil and gas. The RFD scenario estimates the level and type of future oil and gas activity in the planning area and provides a basis for the analysis of cumulative effects. Based on current regulations and the small amount of projected activity on federal mineral estate within the planning area, this RFD is applicable regardless of which of the alternatives analyzed in the EIS is chosen as the Preferred Alternative.

The scenario first describes the steps involved in exploring for and developing deposits of oil and gas. Current levels of activity are discussed in Chapter 3. Trends and assumptions affecting oil and gas activity are discussed in this appendix, followed by estimates for future oil and gas exploration and development.

The scenario for reasonably foreseeable development is based on known or inferred oil and gas potential, and applies the conditions and assumptions discussed below. Changes in available geologic data or economic conditions may alter this scenario, and some deviation should be expected over time. The lands included are limited to those with BLM-administered minerals, including split estate with federal minerals.

It should be noted that not all mineral estate managed by the BLM may have been identified at this time. For purposes of this document, we consider that all mineral estate managed by the BLM is covered by this RFD, even if we do not currently show the mineral estate on BLM maps. We also consider that mineral estate on lands that may be acquired in the future will also be covered by this RFD so long as the values and resources that are contained on the newly acquired lands do not differ significantly from those on existing known federal mineral estate.

F.1.3 Petroleum Geology of the Ukiah Field Office Area

The following description of the petroleum geology of the Ukiah Field Office area is based on regional geological maps of the Ukiah Field Office area, including the Ukiah and Santa Rosa 1:125,000 scale sheets.

In the Ukiah Field Office area, rocks east of the Stony Creek fault are sedimentary rocks of the Great Valley Sequence. These produce gas in the Sacramento valley. All areas of the Ukiah Field Office area east of this fault, as shown on the USGS Potentially Valuable (PV) maps (see Figure F-1) for oil and gas occurrences, should be considered as having potential for oil or gas occurrence and development. This area is roughly described as the area between Lake Berryessa and Grizzly Bay in the southeastern part of the Ukiah Field Office area.

All rocks west of the Stony Creek fault, to the Pacific Ocean, are underlain by complexes of metamorphic (Franciscan), volcanic and plutonic rocks. These rock types are typically not suitable for the accumulation of economic concentrations of hydrocarbons.

The USGS Potentially Valuable maps also show an embayment of PV lands north of San Francisco Bay northwestward through the Cocati Valley. This area has block-faulted Cretaceous sediments under a volcanic cover. The Cretaceous sediments in this area are similar to those producing oil and gas in the Sacramento Valley. There is potential for accumulation of economic concentrations of hydrocarbon in this area also.

F.1.4 Past and Present Oil and Gas Exploration and Development Activity

Although there are more than 140 gas fields (but no oil fields) within the UKIAH FIELD OFFICE management area, there are less than 2,700 acres of federal mineral estate out of the more than 384,000 acres within the administrative boundaries of these fields, which is less than 0.7% of the total. Nearly all of the production and other oil and gas related activities are on non-federal mineral estate, and that trend is expected to continue. Only 14 wells were drilled on federal mineral estate in the last 50 years, and most of those were drilled before 1990. In fact, only 1 well has been drilled on federal mineral estate in the past 10 years, and that well was a dry hole.

Regarding new field discoveries, there have been only between 3 and 5 fields discovered within the last 10 years, none of which contained federal mineral estate. Because of the low amount of activity on federal mineral estate, a more detailed description of past and current activities throughout the entire UKIAH FIELD OFFICE area is unnecessary.

F.1.5 Oil and gas Occurrence and Development Potential

The Ukiah Field Office area has areas of high, moderate, low, and low to none development potential. The size is shown in the Table F-1 below.

Table F-1: Ukiah Field Office Oil and Gas Development Potential

CATEGORY	TOTAL ACRES
High	1,749,000
Moderate	1,224,000
Low	862,000
Low to None	2,764,000
Total	6,599,000

F.1.5.1 High Development Potential

There are two areas of high development potential, defined as those lands in or within 6 miles of existing field boundaries. These zones, containing a total of 1,749,000 acres of high potential, are shown in pink on Figure F-1. The largest high potential zone, along the east side of the Ukiah Field Office area in the Sacramento Basin, has 139 gas fields. The smaller area is in the south-central part of the Ukiah Field Office area, and it contains only 2 fields - the Petaluma and Cotati gas fields. The oil/gas (mostly gas) is produced from upper Cretaceous and lower Tertiary sedimentary rocks.

There have been approximately 4,800 gas wells drilled in the high potential zones. Of these, only 14 are currently under production on federal minerals, and there are 8 additional wells in Federal Units where we have a share of the production, but the wells are not on federal land.

F.1.5.2 Moderate Development Potential

The zone of moderate potential is defined as areas with Upper Cretaceous or Lower Tertiary sedimentary rocks that have historic production or oil and gas "shows" in most drill holes that have explored for hydrocarbons in those sedimentary basins, but little or no economic production. In the southern part of the Ukiah Field Office area, some of these rocks are overlain by younger volcanic units. Although these areas may contain numerous wells that either had production at one time, or had "shows", they are classified as having only moderate development potential because the rocks in this area are generally more highly fractured, and do not generally have trapping styles or cap rocks that permit economic amounts of oil/gas accumulations in this area. The area of moderate oil/gas development potential, a total of 1,223,000 acres, is shown in yellow on Figure F-1.

F.1.5.3 Low Development Potential

There is an area of low oil development potential in the northwest part of the Ukiah Field Office area. This area has rocks of the Eel Ridge Basin and contains rocks that could be suitable for oil and gas accumulation, but no extensive testing has been done in this area, and oil and gas shows are rare or not reported. Another area of low potential occurs along the coast, north of San Francisco. The area is underlain by Miocene rocks of the Monterey Formation, which is the dominant oil-bearing formation in off-shore oil fields of California. The two areas of low oil/gas development potential, a total of 862,000 acres, are shown in green on Figure F-1.

F.1.5.4 None to Low Development Potential

The central part of the Ukiah Field Office area is underlain, for the most part, by crystalline rocks and metamorphic rocks of the Franciscan Formation. These rocks are not likely sources or host rocks for oil/gas accumulations. The oil/gas development potential in these areas is low to none. These areas, a total of 2,763,723 acres, are illustrated in blue on Figure F-1.

F.1.5.5 Occurrence Potential

Figure F-2 can be used to identify areas of oil and gas occurrence potential by use of the following chart.

Table F-2: Ukiah Field Office Development/Occurrence Potential

DEVELOPMENT POTENTIAL	OCCURRENCE POTENTIAL
High (pink)	High
Moderate (yellow)	High
Low (green)	Low to Moderate
Low to None (blue)	Low to None

F.1.6 RFD Baseline Scenario Assumptions, Discussion, and Estimated Surface Disturbance from Oil and Gas Activity on Federal Mineral Estate in the Ukiah Field Office Area

For purposes of this document, we have assumed that all potentially productive areas are open under standard lease terms and conditions, except those areas designated as closed to leasing by law, regulation, or executive order. Based on current regulations and policy and the small amount of projected activity on federal mineral estate within the planning area, this RFD is applicable regardless of which of the alternatives analyzed in the EIS is chosen as the Preferred Alternative.

Future Trends and Assumptions: Based on the history of minimal activity for oil and gas exploration and development on federal lands within the planning area, activity over the next 15 to 20 years is likely to be sporadic. Oil and gas activity will probably consist of the issuance of some competitive and over-the-counter leases, a few geophysical surveys, and perhaps the drilling of 3-5 exploratory wells, with no more than 3-4 development wells, and the associated facilities/gas transmission lines. It is very unlikely that more than a total of 9 exploratory and development wells will be drilled on new federal oil and gas leases. While the large majority or even all of this activity is expected to occur in areas identified in this RFD as "High Development Potential," there is always a possibility that federal minerals in other areas may see geophysical exploration, leasing, and even actual exploration and development drilling. It is highly unlikely that any wells in such an area would be productive, so any associated surface disturbance would likely be short term.

Geophysical Exploration: Geophysical exploration is conducted to determine the subsurface structure of an area and the potential for mineral resources. There are three geophysical survey techniques that are generally used to define subsurface characteristics through measurements of the gravitational field, magnetic field, and seismic reflections.

Gravity and magnetic field surveys—involve small, portable measuring units that are easily transported by light off-highway vehicles, such as 4-wheel drive pickup trucks and jeeps, or aircraft. Both off and on-highway travel may be necessary. Although these two survey methods can take measurements along

defined lines, it is more common to have a grid of distinct measurement stations. Surface disturbance resulting from these surveys is negligible, consisting almost exclusively of soil or vegetation compaction that persists no more than a few months.

Seismic reflection surveys—are the most common of the geophysical methods, and they produce the most detailed subsurface information. Seismic surveys are conducted by sending shock waves, generated by a small explosion or by mechanically beating the ground with a thumping or vibrating platform.

In the explosive method, small charges are detonated on the surface or in a shallow drill hole. The surface charge method uses 1 to 5-pound charges attached to wooden laths 3 to 8 feet above the ground. Placing charges lower than 6 feet usually results in destruction of vegetation, whereas placing the charges higher, or on the surface of deep snow, results in little visible surface disturbance. In the drill hole method, holes for the charges are drilled using truck-mounted or portable air drills. In general, this method uses 4 to 12 holes per mile of line, and a 5 to 50-pound explosive charge is placed in each hole, covered, and detonated. The shock wave created is recorded by geophones placed in a line on the surface. In rugged terrain, a portable drill carried by helicopter can sometimes be used. The vehicles used for a drilling program may include heavy truck-mounted drill rigs, track-mounted drill rigs, water trucks, a computer recording truck, and a light pickup.

In the mechanical method, four large trucks are usually used, each equipped with pads about 4-feet square. The pads are lowered to the ground, and the vibrations are electronically triggered from the recording truck. Once information is recorded, the trucks move forward a short distance and the process is repeated. Surface disturbance includes flattening of vegetation and compaction of soils.

In either type of seismic reflection surveys, existing roads and trails are used where possible. However, off-road travel is necessary in some cases. Several trips per day are made along a seismograph line, usually resulting in a well defined two-track trail.

It is expected that no more than three Notices of Intent, involving seismic reflection and gravity/magnetic field surveys across federal surface, would be filed under all Alternatives and the Proposed RMP during the life of this plan. Although it is unlikely, it is possible that one or two of the parcels with federal surface could be involved in a 3-D seismic proposal. If that occurs, the total expected surface disturbance could be up to 9 acres, based on up to 25 miles of seismic lines and a two track road with each track being 18" wide. It is possible that much of the travel could be located on existing roads or other previously disturbed lands, and there could be some hand laying of lines, and that would result in less new disturbance.

Drilling Phase: After a parcel is leased, there may or may not be any actual disturbance. In fact, historically, a large majority of leases are relinquished without ever having any actual surface disturbance. In the event that an Application for Permit to Drill (APD) is submitted, a site specific evaluation will be made by the BLM to ensure compliance with NEPA requirements. Based on the results of that evaluation, additional Conditions of Approval may be added, and the operator may only begin construction after complying with lease stipulations and Conditions of Approval of the drilling permit. When a site requires construction of an access road, the shortest feasible route is usually selected to reduce the haul distance and construction costs. Environmental factors or a landowner's wishes may

dictate a longer route in some cases. Drilling in the planning area is expected to be done using existing roads and construction of only short (approximately 0.5 mile) roads to access drill site locations.

Even though there are more than 140 gas fields and no oil fields that are partly or totally within the Ukiah FO area, only a very small fraction of the land within the administrative boundaries of those fields contains federal minerals (2,671 federal acres out of a total of more than 384,000 acres, or 0.7%). Virtually all drilling within the past ten years is in or within 6 miles of an existing field, and the total percentage of federal acreage in that 6 mile buffer area is even smaller (9,347 acres out of more than 1,816,000 acres, or 0.5%). In the past ten years, 521 wells have been drilled in the entire FO area, but only one well has been drilled on federal minerals within the entire FO area, and that well was a dry hole. Consequently, based on the history of oil and gas exploration in the planning area, it is projected that no more than three to five exploratory wildcat wells (wells outside of the administrative boundary of existing oil and gas fields) would be drilled on BLM-administered land in the planning area during the life of this plan. Although the success rate for wildcat wells has improved markedly during the past decade, largely due to improved seismic data, it is still unlikely that any new fields would be discovered by drilling on federal minerals because there is so little federal mineral estate in prospective areas. Most drilling is expected to occur in areas of land designated by the USGS as Prospectively Valuable, as identified on Figure F-1. Although there is a low probability that a field will be discovered on federal land during the life of this plan, if a field were to be discovered that contained federal land, it is likely that the discovery would be natural gas because all of the occurrences in the area are gas.

During the first phase of drilling, the operator would move construction equipment over existing maintained roads to the point where the access road begins. Less than 0.5 mile of moderate duty access road with a gravel surface 20 feet wide is expected for construction. With ditches, cuts, and fill, the total width of surface disturbance would average 40 feet. The second part of the drilling phase is the construction of a drill pad up to 1 acre in size. The likely duration of well development, testing, and abandonment is 3 or 4 months per site. The total disturbance for each exploratory well and any new road is estimated to be 3.4 acres. The total surface disturbance caused by exploratory drilling of 3-5 wells over the life of this plan is expected to be no more than 10-17 acres.

Field Development and Production: Exploratory drilling is not expected to lead to the development of a producing field in the planning area. Nonetheless, the following scenario describes the operations and effects associated with field development.

The minimum size considered economically feasible would depend mainly on its proximity to existing infrastructure. There are many gas fields throughout the eastern portion of the UKIAH FIELD OFFICE area, and it is likely that any pipelines from a new field would be relatively short. The wells within the actual productive boundaries (smaller than the administrative boundaries) of the gas field are spaced on average at 80 acres. Although it is unlikely that a new field will be discovered on federal minerals, for planning purposes we will assume a fairly small to mid size field may be discovered somewhere within the planning area. The average field size is currently approximately 2,700 acres, or 4 square miles. The average federal parcel within the 6 mile buffer area, where virtually all drilling is likely to occur, is approximately 135 acres. At 80 acres per well, that size parcel could be fully developed with 2 wells per parcel. In the unlikely case that a field is discovered and 2 federal parcels are involved, there would be an estimated 3-4 wells on federal minerals. Each development well would require an estimated 0.25 mile of road. Development well access roads would have a surface of crushed aggregate or gravel

and would be approximately 20 feet wide (total disturbed width of 40 feet). Well pads would be no more than 1 acre in size. Gas produced would be carried by pipelines that could be linked to existing and proposed gas transmission lines in the planning area. Average infield pipeline length is estimated to be 0.25 mile per well, which could probably be largely contained within the road right of way and little new surface disturbance would be required. The total distance from a new field to an existing gas transportation pipeline is likely to be less than 10 miles. The width of the surface disturbance for pipelines would average 20 feet.

The total surface disturbance for up to 4 development wells would be 4 acres for well pads, 5 acres for roads, and 24 acres for a single gas transmission line 10 miles long. No more than 1 acre would be required for the small facility (meter, separator) on each parcel, for a total of 2 acres. The total surface disturbance caused by seismic operations, exploration drilling, and development would be 61 acres (see Table F-3).

Table F-3: Oil and Gas Exploration Disturbance

DESCRIPTION	NUMBER	UNIT SURFACE DISTURBANCE (ACRES)	TOTAL SURFACE DISTURBANCE (ACRES)
Exploratory Wells			
Well Pads	5 well	1 acre/well	5
Roads (40' wide)	5 x 0.5 miles	4.8 acre/mile	12
Development			
Well Pads	4	1 acre/well	4
Roads (40' wide)	4 x 0.25 mi	4.8 acre/mile	5
Facilities	2	1 acre/facility	2
Seismic (2 track x 18")	25 miles	0.36 acre/mile	9
Gas Transmission Pipeline (20' wide)	10 miles	2.4 acres/mile	24
		Total:	61

Plugging and Abandonment: Wells that are drilled and determined to be dry holes are plugged according to a plan designed for the condition of each well. Plugging involves placing cement plugs at strategic locations in the hole. Drilling mud is used as a spacer between the plugs to prevent communication between fluid-bearing zones. The drill casing is cut off at least 5 feet below ground level and capped by welding a steel plate on the casing stub. After plugging, all equipment and debris would be removed and the site restored as near as reasonably possible to its original condition. It is projected that much of the surface disturbance from exploratory activities and all of the seismic activities would be of short duration (between a few months and a couple of years). The impacts from the successful development wells would last longer, but it would still be completely reclaimed eventually.

Military Bases: There are several military bases within the planning area, and some of them are in areas with nearby wells in several or even all directions. Leasing these lands requires consent from the local Base Commander**.** It has been shown in numerous cases across the country and within California that oil and gas exploration and development can often be conducted in a manner that is fully compatible with ongoing military operations. It is quite possible that negotiations between BLM and military personnel may result in agreement to lease lands within the boundaries of bases or other military lands. In the

event that happens, appropriate leasing stipulations that would fully protect the military's mission will be added prior to any land being leased.

Ukiah Field Office
easonably Forseeable Development Scenario
Oil and Gas Development Potential
May 2005

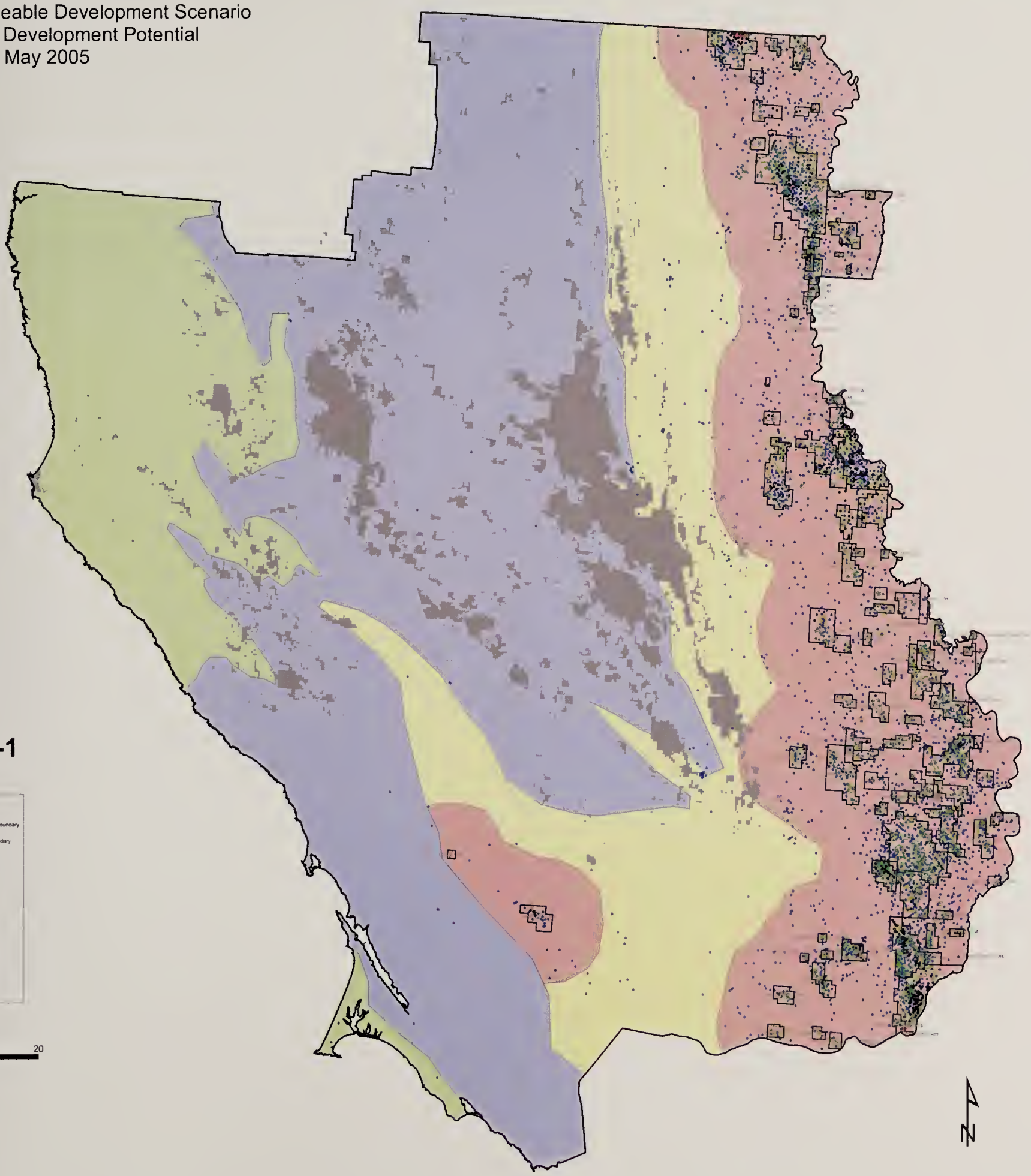

Figure F-1

APPENDIX G

REASONABLE FORESEEABLE DEVELOPMENT SCENARIO – SOLID MINERALS

APPENDIX G

G.1 REASONABLE FORESEEABLE DEVELOPMENT SCENARIO – SOLID MINERALS

G.1.1 Introduction

This appendix describes scenarios for the reasonably foreseeable development of locatable and saleable mineral commodities. The scenario for reasonably foreseeable development estimates the level and type of future mineral activity in the planning area and provides a basis for the analysis of cumulative effects. The scenario first describes the steps in developing a mineral deposit, with presentation of hypothetical exploration and mining operations. Current levels of activity are discussed in the Affected Environment chapter. Trends and assumptions affecting mineral activity are discussed in this appendix, followed by estimates for future mineral exploration and development.

G.1.2 Scope

The scenario for reasonably foreseeable development is based on known or inferred mineral resource capabilities and applies the conditions and assumptions discussed below. Changes in available geologic data or economic conditions would alter reasonably foreseeable development, and some deviation should be expected over time. The development scenario is limited to BLM-administered land, including split estate with federal minerals.

G.1.3 Locatable Mineral Resources

G.1.3.1 Reasonably Foreseeable Development Scenarios

The major commodities of interest over the next 15 to 20 years may be gold, silver, and mercury. There are known occurrences of these minerals in the planning area, however, this commodity is not expected to generate any significant interest during the life of the plan. This assessment is based on market conditions (especially for precious metals) and the favorable geologic environment for mineral occurrences. Reclamation science will continue to advance due to experience and research. More detailed design will be required for the reclamation of mined land in the future. This will likely increase reclamation costs but should also increase long-term reclamation success. The economics of mining in the planning area will be driven by the relationship between production costs and the market price of the commodity. Whereas production costs can be controlled, or anticipated through management and technology, the price of a commodity is difficult to predict over time. The overall profitability of an operation—and hence the level of activity at the prospecting, exploration, and mining stages—for development of ore bodies is closely related to the price of the mineral commodity.

Over the next 15 to 20 years, it is expected that one open-pit gold or silver mine using chemical heap leaching, at least in part, may be developed in the planning area.

G.1.3.2 Background on the Development of a Locatable Minerals Mine

Typically, the development of a mine goes through five stages, with each stage using progressively more sophisticated (and more expensive) techniques over a successively smaller area to identify, develop, and

produce an economic mineral deposit. The full sequence of developing a mineral project involves reconnaissance, prospecting, exploration, economic evaluation, and development.

Reconnaissance: Reconnaissance is the first stage in exploring for a mineral deposit. This involves an initial literature search for the area of interest using available references, such as publications, reports, maps, and aerial photographs. Because the study area is usually large, varying from hundreds to thousands of square miles, this stage normally involves large-scale mapping, regional geochemical and/or geophysical studies, and remote sensing with aerial or satellite imagery. These studies are generally undertaken with minimal surface disturbance, which usually consists of stream sediment, soil, or rock sampling. Minor off-highway vehicle use may be required.

Prospecting: If reconnaissance identifies anomalous geochemical or geophysical readings, rare or unusual geological features, evidence of mineralization, or a historical reference to mineral occurrence, a prospecting area of interest is identified. This area could range from a single square mile to an entire mountain range of several hundred square miles.

Activity to locate a mineral prospect includes more detailed mapping, sampling, and geochemical and geophysical study programs. This is the time when property acquisition efforts usually begin and most mining claims are located to secure ground while trying to make a mineral discovery. Surface-disturbing activities associated with prospecting include more intense soil and rock chip sampling, using mostly hand tools; frequent off-highway vehicle use; and placement and maintenance of mining claim monuments. This activity is usually considered casual use and does not require BLM notification or approval.

Exploration: Upon location of a sufficiently anomalous mineral occurrence or favorable occurrence indicator, a mineral prospect is established and subjected to more intense evaluation through exploration techniques. Activities during exploration include those used during prospecting, but at a more intense level and in a small area. In addition, road construction, trenching, and drilling take place. In the later stages of exploration, an exploratory adit or shaft may be driven. If the prospect already has underground workings, these may be sampled, drilled, or extended. Exploration activities use mechanized earth-moving equipment, drill rigs, etc., and may involve the use of explosives.

Typical exploration projects in the planning area could include in-stream dredging with portable suction dredges; exploratory drilling, which could include construction of new roads; use of explosives to sample rock outcroppings; and excavation of test pits. If the exploration project disturbs 5 acres or less, it is conducted under a notice (43 CFR 3809.3) which requires the operator to notify the BLM at least 15 days prior to beginning the activity. If a project for mining is conducted under a plan of operations (43 CFR 3809.4) it requires NEPA compliance prior to approval.

Economic Evaluation: If an exploration project discovers a potentially economic deposit, activity would intensify to obtain detailed knowledge of the deposit (such as ore grade and deposit size), possible mining methods, and mineral processing requirements. This would involve applying all the previously used exploration tools in a more intense effort. Once enough information is obtained, a feasibility study would be made to decide whether to proceed with mine development and what mining and ore processing methods would be used.

Mine Development: Once the decision to develop a property has been made, the mine permitting process begins. Upon approval, work begins on development of the mine infrastructure. This includes constructing the mill, offices, and laboratory; driving development workings if the property is to be an underground mine, or prestripping if it is to be an open-pit mine; building access or haul roads; and placing utility services. Evaluations of ore reserves may be refined at this time.

Once enough facilities are in place, production begins. Satellite exploration efforts may be conducted simultaneously to expand the mine's reserve base and extend the project life. The property is reclaimed concurrently with the mining operation or upon its completion. Often uneconomic resources remain unmined and the property dormant until changes in commodity prices or production technology makes these resources economically feasible to mine.

Activities on these lands include actual mining, ore processing, tailings disposal, waste rock placement, solution processing, metal refining, and placement of support facilities, such as repair shops, laboratories, and offices. Such activities require the use of heavy earth-moving equipment and explosives for mining and materials handling, exploration equipment for refining the ore reserve base, hazardous or dangerous reagents for processing requirements, and other equipment for general construction.

The size of mines varies greatly, and not all mines require all of the previously mentioned facilities and equipment. The amount of land involved can range from only a few acres to several hundred acres. All mining projects or surface disturbances greater than casual use require a plan of operation pursuant to 43 CFR 3809.4.

G.1.3.3 Reasonably Foreseeable Development

Gold/Silver

Exploration: Based on mineral exploration activity over the past 10 years and known occurrences in the planning area of epithermal type gold deposits, exploration for gold is expected to take place during the life of this plan.

Depending on the market for gold, up to 10 exploration projects for epithermal gold deposits are expected over the next 15 to 20 years. A typical epithermal gold exploration project would involve six drill holes and approximately 0.5 mile of new road 12 feet wide (total disturbed width of 20 feet) for each drill hole, resulting in 4.2 acres of disturbance/project, or 105 acres of total disturbance.

Economic evaluation/mine development: In the state of California the "total pit backfill" legislation may preclude future open pit mine development.

Exploration activity may result in the discovery 1 open-pit deposit, employing about 170 people. The possible deposit would be located in or adjacent to areas of known potential for gold/silver.

The open-pit mine is expected to contain between 10 and 90 million tons of ore, with a probable size of 15 million tons, averaging 0.06 troy ounces of gold per ton. Detailed exploration and feasibility studies would involve the construction of about 30 miles of road 12 feet wide (total disturbed width of 20 feet with ditches, cuts, and fills), and 300 drill sites, for a total disturbance of 75 acres. Development of the

deposit would involve creation of an open pit, 2,100 feet in diameter and 800 feet deep; a mill complex; a cyanide heap leach pad; a tailings disposal facility; a waste disposal facility; approximately 5 miles of internal graveled haul road 90 feet wide with a total disturbance of 100 feet; and 15 miles of all-weather access road 20 feet wide (total disturbed width of 36 feet). Surface disturbance would cover 85 acres for the pit, 40 acres for the mill complex, 65 acres for the heap leach pad, 140 acres for the tailings disposal facilities, 260 acres for the waste disposal facilities, 60 acres for internal haul roads, and 65 acres for access roads. Total surface disturbance caused by this project would be 715 acres.

G.1.4 Saleable Mineral Resources

G.1.4.1 Reasonably Foreseeable Development Scenarios

Saleable minerals, or mineral materials, exist on public lands in the planning area. The major use of saleable minerals (primarily sand and gravel and crushed/broken rock) is for road development/maintenance and commercial sales. No sales of mineral materials have occurred on public lands in the planning area in the past decade. Sources of mineral materials on private lands are available and more accessible than those on public lands.

G.1.4.2 Background on the Development of Saleable Mineral Deposits

Development of a saleable mineral deposit goes through a sequence similar to that for locatable minerals and includes reconnaissance, prospecting, exploration (sampling and testing), and development. Unlike the process for locatable minerals, however, written approval (such as a permit) must be obtained from the BLM and the material must be purchased by the operator (in the case of a private citizen or commercial operator) before the deposit can be developed, as required by the 1947 "Materials Act" as amended (30 U.S.C. 601 et seq.). The act also grants the Federal government discretionary authority to deny permission to develop a deposit if the damage to public land or resources would outweigh the economic benefits of development.

Reconnaissance and prospecting for saleable minerals involves a literature search, field examination, geologic mapping (if necessary), and surface sampling. Surface disturbance is usually negligible. Exploration is usually confined to a small area and generally involves drilling or core drilling to determine whether the material meets construction standards. Because exploration is normally limited to areas with good access to major roads, little or no road construction is involved. A typical operation usually involves a number of small trenches or core holes and would disturb less than 0.01 acre/site. Mine development normally involves a pit or quarry, space for processing (crusher, stockpile, and occasionally an asphalt plant), and a staging area for trucks (loading and a turnaround area). Disturbance can cover anywhere from 5 to 40 acres/project.

G.1.4.3 Reasonably Foreseeable Development

<u>Exploration</u>

During the next 15 to 20 years, up to 5 exploration projects are expected within the planning area in areas of known or suspected occurrences of mineral materials. Approximately 1 project may be conducted for sand and gravel, 2 for rock aggregate (crushable or naturally broken material), and 2 for decorative rock.

A typical sand and gravel operation would involve up to five trenches, perhaps 8 by 10 feet and up to 20 feet deep, disturbing about 100 square feet per trench, or about 0.01 acre/project; total disturbance would be approximately 0.01 acre. A typical rock aggregate exploration project would involve up to eight core holes, disturbing about 0.01 acre/hole, or 0.1 acre/project; total disturbance would be about 0.2 acre. A typical decorative rock exploration project would use no mechanized equipment and would be limited to surface sampling, essentially identical to a prospecting project; surface disturbance would be negligible.

Development

Sand and gravel: During the life of the plan, it is expected that no new sand and gravel deposits with good quality material will be developed in easily accessible areas (such as within a few miles of major roads).

Rock Aggregate: During the life of this plan, it is expected that 1 new deposit of good quality material will be developed in easily accessible areas (such as within a few miles of major roads). When the County or State Transportation Departments need additional sources of material for major projects, highway material rights-of-way may be granted under title 23 of the "Federal Highway Act" for a deposit adjacent to highways.

Rock aggregate deposits would require site-specific NEPA assessments and inventories of cultural resources and threatened and endangered species prior to development.

A typical rock aggregate quarry would contain a pit, stockpile area, truck turnaround and loading area, processing area (crusher, screener, washer, conveyor, asphalt plant, etc.), and about 2,500 feet of new access road 20 feet wide (36 feet total disturbed width). Disturbance would cover 2 acres for the quarry operations and 2 acres for the access road, or 4 acres per project. Total disturbance would be 4 acres.

Decorative stone: A population increase over the next 15 to 20 years will result in a moderate increase in demand for decorative material. It is expected that one new collecting site would be designated to meet the increase in demand. This site would be reached by existing roads. Site-specific NEPA assessments and inventories for cultural resources and threatened and endangered species would be required prior to designation.

Extraction of the material would be by surface methods only, such as loading onto pickup or flatbed trucks or pallets, by hand or by rubber-tired front-end loaders. Surface disturbance resulting from these operations would be negligible.

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APPENDIX H

REASONABLE FORESEEABLE DEVELOPMENT SCENARIO – GEOTHERMAL RESOURCES

APPENDIX H

H.1 REASONABLE AND FORESEEABLE DEVELOPMENT SCENARIO-GEOTHERMAL RESOURCES

H.1.1 Introduction

This Reasonable Foreseeable Development (RFD) scenario has been developed as a basis for analyzing environmental impacts resulting from future development of federal geothermal resources. As the name implies, the level and type of development anticipated in this RFD is a "best guess" of what may occur in the next 20 years. It is not intended to be a "maximum-development" scenario; however it is biased towards the higher end of expected development.

The foreseeable development described here could occur on any BLM-administered land or on any split-estate land (private surface/federal minerals) within the Field Office that has not been explicitly closed to leasing in the RMP alternative selected. The selected alternative may also impose additional leasing restrictions which could affect the scenarios described.

While site-specific development scenarios would be too speculative to be of any value, an attempt is made in this RFD to delineate potential development into three distinct geographic regions. The first region is called "The Geysers" (see Figure H-1) which encompasses the existing geothermal development along with areas that may have potential for additional large-scale development. Geothermal development within "The Geysers" area is anticipated to be fairly consistent with the current development seen in the rest of the existing field.

The second region is outside of The Geysers region, but inside of the Geysers and Calistoga Known Geothermal Resource Areas (KGRA). Geothermal development within this area will be much less intense than inside The Geysers. It may include exploration, a few direct use projects, and perhaps a binary powerplant.

The final region is the rest of the field office outside of the Geysers and Calistoga KGRAs. Development in this region will be limited to exploration and one direct-use facility.

Table H-1: Anticipated Surface Disturbance for the Ukiah Field Office

REGION	DISTURBANCE (ACRES)
1 – The Geysers	698 (initial) 480 (final)
2 –Geysers-Calistoga KGRA	681 (initial) 535 (final)
3 – Rest of the Field Office	109
Total	1,488 (initial) 1,124 (final)

H.1.2 Region 1 – The Geysers

The Geysers region encompasses the existing geothermal field in addition to undeveloped acreage around the field. Development within this region is expected to be the most intense with drilling of deep geothermal production and injection wells and the construction of four new power plants. Development will also include Enhanced Geothermal Systems (EGS), ancillary facilities such as pipelines, access roads, transmission intertie lines, and various minor structures to support operation and maintenance of the existing and new development.

Within The Geysers region, there are approximately 5500 acres of unleased split estate land and 500 acres of unleased public land, for a total of 6000 acres. It is anticipated that all of this acreage will be leased over the next 20 years.

H.1.2.1 New wells

Surface Disturbance

Up to 50 new wells will be drilled on the 6000 acres of new leases. These wells will normally range in depth from 6,000' to 12,000'. As technology and economics change over the next 20 years, it is foreseeable that wells drilled to depths of 18,000' may also become practical. These wells may be used for production, injection, or heat exchange. All wells will be permitted by BLM using standard review methods that ensure 1) protection of ground water, 2) protection of public safety, and 3) that the environment is not unduly damaged.

The wells will be drilled from 20 drilling locations; five of the locations will be for single-well exploration and 15 of the locations will be for multi-well development. Some of the single-well pads may be converted into multi-well pads if sufficient quantities of steam are discovered in those areas. The single-well locations require approximately 5 acres of surface disturbance, which includes cut and fill. Multi-well locations require 7 acres of total surface disturbance. Each location will also need 1 mile of 30-foot wide access road, which includes cut and fill. The 15 locations for development wells will also require 1 mile of pipeline. Pipelines are typically routed next to roads and add about 10 feet to the total width. It is assumed that all drilling locations will remain open for the life of the RMP.

Table H-2: Total Foreseeable Surface Disturbance for New Wells in Region 1

DESCRIPTION	UNIT SURFACE DISTURBANCE (ACRES)	NUMBER	TOTAL SURFACE DISTURBANCE (ACRES)
Single-well location	5	5	25
Multi-well location	7	15	105
Access roads	3.6 acres/mi	20	72
Pipelines	1.2 acres/mi	15	18
		Total:	220

Noise

Each well is expected to take between 60 and 120 days to drill. During this time, high levels of noise will be generated by the diesel engines that power the drilling rig and air compressors, as well as from the draworks, drawworks brake, racking of pipe, and venting steam. The racking of pipe and drawworks

brake are higher pitched noises that typically travel further and are more difficult to mitigate than sources such as diesel engines. All diesel engines will use mufflers per standard industry practice. All steam is vented through mufflers to reduce noise. Up to three drilling rigs could be in operation simultaneously.

The nearest "sensitive receptor" is the community of Anderson Springs, which is approximately 4 miles from the nearest parcel that could be leased by BLM. It is highly improbably that any of the noises generated on newly leased tracts could be heard in Anderson Springs.

Air Quality

Diesel engine exhaust, venting of steam, and dust are the primary impacts to air quality from the drilling of wells. Vented steam can contain significant amounts of dust, hydrogen sulfide, and other non-condensable gases. Hydrogen sulfide emissions are abated through the injection of hydrogen peroxide and sodium hydroxide into the blooie line. Dust emissions from venting steam are reduced by injecting water into the blooie line. Dust emissions from roads is mitigated by periodic watering.

Ground Water

There are no known Underground Sources of Drinking Water at The Geysers as defined by the Environmental Protection Agency. There are some perched aquifers that are typically associated with shallow land slides. These aquifers are not of sufficient size to be considered aquifers.

Geothermal wells at The Geysers include multiple casing strings at shallow depths where perched aquifers could occur. Typically, surface casing is set between 500' and 1000', an intermediate string is set at 2000' to 4000', and a production string is set to 4000' to 6000'. All casing is cemented in place using standard industry practice. In addition, all injection wells are required to be tested every two years to ensure that the static water level is at least 500' below ground level while injecting.

H.1.2.2 Powerplants

Surface Disturbance

It is anticipated that up to 4 new powerplants will be built to utilize the steam from the 6000 acres of new leases. For the purpose of this RFD, it will be assumed that all 4 powerplants will be on land that overlays the new lease areas. The powerplants will be in the 20-50 MegaWatt (MW) range; considerably smaller than the large 70 – 130 MW plants built during the 1970s and 1980s. Plants are designed as a dry-steam cycle. Steam from the wells is gathered and delivered to a specially designed low pressure turbine. The turbine extracts heat energy from the steam and converts it into mechanical energy which is used to spin a generator. After traveling through the turbine, the steam enters a condenser where it is cooled and turned into liquid water. The water is then sent to a cooling tower which cools the water through evaporation (approximately 80% of the water is lost to evaporation). Cold water from the bottom of the cooling tower is circulated through the condenser to maintain a low temperature. Excess water from the cooling towers is injected back into the steam reservoir. Non-condensable gas (hydrogen sulfide, carbon dioxide, ammonia, and others) is extracted from the condenser and sent to a hydrogen sulfide abatement unit. The hydrogen sulfide is converted to non-hazardous elemental sulfur; the other non-condensable gases are vented. It is expected that each new powerplant could generate as much as a ton of sulfur per

day. The sulfur will be sold and transported to facilities in the bay area for fertilizer, varnish, acid, and other uses.

Each plant would require about 15 acres, which would be 25 acres of total surface disturbance including cut and fill. Each plant would also require one mile of access road and 5 miles of new 230kV transmission line to intertie with existing transmission lines. It is assumed that the access road will require 30 feet of surface disturbance, which includes cut and fill. Transmission intertie lines require 100' of initial surface disturbance; however, once the lines are constructed all but a 20' access road would be reclaimed with grass and brush.

Table H-3: Total Surface Disturbance for Powerplants in Region 1

DESCRIPTION	UNIT SURFACE DISTURBANCE (ACRES)	NUMBER	TOTAL SURFACE DISTURBANCE (ACRES)
Powerplant location	25	4	100
Access roads	3.6 ac/mi	4	14
Transmission lines – initial	12.1 ac/mi	20	242
Transmission lines – final	2.4 acres/mi	20	48
		Total:	356 (initial) 162 (final)

Noise

Powerplant noise usually entails a constant low-level hum primarily created by the cooling tower fans. As with the wells, the nearest "sensitive receptor" is the community of Anderson Springs, which is approximately 4 miles from the nearest parcel that could be leased by BLM. It is highly improbably that any of the noises generated by powerplants utilizing steam from the newly leased tracts could be heard in Anderson Springs.

Air Quality

Air quality from powerplants is regulated by local air quality control boards. Hydrogen Sulfide emissions, the primary pollutant, are mitigated through the use of various abatement processes. The most common method is called the "Stretford Process" which uses acetic acid and a vanadium catalyst to turn hydrogen sulfide into elemental sulfur.

Visual

Powerplants will be sited using trees and terrain to obstruct visual impacts to the extent possible. All facilities will also be painted a color that blends into the natural setting. Steam plumes from the cooling towers often rise several hundred feet above the cooling towers, especially on cold clear days.

H.1.2.3 Enhanced Geothermal Systems

Projects classified as "Enhanced Geothermal Systems" (EGS) are very likely to happen at The Geysers over the next 20 years. These projects will occur on new lease areas as well as existing lease areas. Examples of EGS projects include, but are not limited to:

- Hydro-fracturing reservoir rock to increase permeability
- Acidizing to increase reservoir permeability
- Increase and improve injection to help sustain reservoir pressure

Hydro-fracturing involves pumping a fluid into a wellbore at a high rate and at high pressure. Fluid pressure exceeds the rock strength, creating a fracture in the reservoir. The fracture is propagated by the continued pumping of fluid. Usually, the fluid contains sand or other type of propant, which holds the fractures open when the pressure is released. Hydro-fracturing requires a large number of service trucks to provide the fracture fluid and pumping capacity. The BLM would review all EGS proposals to ensure that well design limits are not exceeded. Because hydro-fracturing is done on existing wells, the only additional surface that may be required is some pad expansion to accommodate the equipment.

Acidizing is a similar procedure to hydro-fracturing. Large volumes of acid are pumped down a wellbore and into the reservoir rock. The acid (typically hydrochloric and sulfuric) dissolves silica and scale which may have built up inside existing fractures, thereby improving permeability. Acid inhibitors, along with pre and post flushes are used to control the acidization process and protect the well casing. As with hydro-fracturing, the acidization process requires a large number of service trucks to hold the acid solutions and the pumps necessary to complete the job. The only additional surface distrubance that may be required is some pad expansion to accommodate the equipment.

Another foreseeable EGS project is the continued expansion and improvement of injection to help sustain reservoir pressures and extend the life of the field. Two such projects have already been completed: The Lake County Effluent Pipeline and the Santa Rosa Effluent Pipeline. Both projects deliver treated sewage effluent to The Geysers for injection. For the purpose of this RFD, it will be assumed that 20 miles of new pipeline will be required, and the pipeline right-of-way will initially be 30' wide. After construction, all but an 18' access road will be planted with grass and brush.

Table H-4: Total Surface Disturbance for EGS Projects in Region 1

DESCRIPTION	UNIT SURFACE DISTURBANCE (ACRES)	NUMBER	TOTAL SURFACE DISTURBANCE (ACRES)
Pad expansion	1	30	30
Pipelines - initial	3.6 ac/mi	20	72
Pipelines - final	2.4 acres/mi	20	48
		Total:	102 (initial) 78 (final)

H.1.2.4 Operation and Maintenance

On both new and existing lease areas, some additional surface disturbance will be created by ongoing operation and maintenance. These projects may include the construction of ancillary facilities such as pumps, sub-stations, storage areas, 21kV transmission lines to power various equipment, and metering stations. Most of these projects will be constructed on existing well pads and power plant locations; however, for the purpose of this RFD, it is anticipated that 20 acres of additional surface disturbance may be required to accommodate these projects.

H.1.3 Region 2 – The Geysers-Calistoga KGRA

Region 2 encompasses areas outside of The Geysers region, but inside The Geysers and Calistoga KGRAs. Although most geothermal development is anticipated to occur in Region 1, it is foreseeable to assume that some additional development may be possible in Region 2. Some of this development will involve geophysical exploration including the drilling of temperature gradient wells. It is further assumed that any resource discovered in Region 2 will be a low temperature hot water resource and development will be in the form of binary power plants and direct-use facilities.

To accommodate this development, it is anticipated that 6000 acres of new leases will be issued by BLM in Region 2.

H.1.3.1 Exploration

As with oil and gas, geophysical/geochemical exploration can take place on leased or unleased public land. The operator must comply with all terms and conditions of permits, regulations, and other requirements, including reclamation, prescribed by the authorized officer. Monitoring for compliance with these requirements would be done during operations and upon their completion. The following exploration techniques are often employed for geothermal:

- Passive Microseismic: Small seismometers buried at a shallow depth (hand-dug holes) transmit signals from naturally occurring, extremely minor seismic activity (microearthquakes) to an amplifier on the surface. Stations are located away from roads to avoid the effects of traffic. These units are often backpacked into areas inaccessible to vehicles.
- Active Seismic: Same as passive microseismic, except that seismic events are artificially induced. This can be done with something as benign as a metal plate and sledge hammers, or at the most, shallow wells would be drilled to 20'-100' deep and small explosive charges would be set off in the holes. The holes would then be filled and reclaimed.
- Telluric: A string of receivers record the variations in the natural electric currents in the earth. No transmitter is required. Small trucks are used to transport the crew and equipment.
- Radiometric: Radioactive emissions (generally radon gas) associated with geothermal resources are measured using a hand-held scintillometer, often at hot spring locations. Another method involves placing plastic cups containing small detector strips sensitive to alpha radiation either on the surface or in shallow hand-dug holes. If holes are dug, they are covered, and the cups are left in place for 3 to 4 weeks. At the end of the sampling period, the cups are retrieved and all holes are backfilled. These surveys can be conducted by walking to the sites or with the aid of light vehicles.
- Geochemical surveys: Geochemical surveys are usually conducted at hot springs by taking water samples directly from the spring. Mercury associated with geothermal resources is often sampled using hand tools. These surveys can be conducted by walking to the sites or with the aid of light vehicles.

The total surface disturbance of all the above geophysical techniques done in Region 2 is anticipated to be less than 5 acres. Many of the above activities could be considered as "casual use" requiring no action for BLM.

In addition to the above geophysical techniques, temperature gradient holes are used to determine the rate of change of temperature with respect to depth. Temperature gradient holes usually vary in diameter from about 3.5 to 4.5 inches, and from a few hundred feet to 5,000 feet in depth. They are drilled using rotary or coring methods. Approximately 4 to 5 acres/drill hole would be disturbed. This disturbance includes the drilling location, access road, and any required cut and fill. A typical drill site could contain a drill rig (most likely truck-mounted), water tank(s), fuel tank, supply trailer, and a small trailer for the workers. Drilling mud and fluids would be contained in earthen pits or steel tanks.

Other equipment that could be used includes large flatbed trucks to haul drill rod, casing, and other drilling supplies; in some cases special cementing and bulk cement trucks; and two small vehicles for transporting workers. Existing roads would be used if possible. It is likely that short spur roads (usually less than ½ mile) would be bladed for each hole. All holes would be plugged and abandoned to protect both surface and subsurface resources, including aquifers, and reclamation of disturbed areas would be required, unless some benefit to the public could be gained (for example, a water well or camping area). Detailed drilling programs that cover drilling methods, casing and cementing programs, well control, and plugging and abandonment would be required. It is expected that 30 temperature gradient holes would be drilled during the life of this plan, which would result in a total surface disturbance of 150 acres.

H.1.3.2 New production wells

Surface Disturbance

Up to 30 new wells will be drilled on the 6000 acres of new leases. These wells will normally range in depth from 1,000' to 4,000'. Because there is no direct correlation between depth and surface disturbance, this depth range should not be considered a limiting factor when implementing the Ukiah RMP. These wells may be used for production, injection, or heat exchange. All wells will be permitted by BLM using standard review methods that ensure 1) protection of ground water, 2) protection of public safety, and 3) that the environment is not unduly damaged.

The wells will be drilled from 20 drilling locations; 10 of the locations will be for single-well exploration and 10 of the locations will be for multi-well development. Some of the single-well pads may be converted into multi-well pads if sufficient quantities of hot water are discovered in those areas. The single-well locations require approximately 5 acres of surface disturbance, which includes cut and fill. Multi-well locations require 7 acres of total surface disturbance. Each location will also need 1 mile of 30-foot wide access road, which includes cut and fill. The 10 locations for development wells will require 1 mile of pipeline. Pipelines are typically routed next to roads and add about 10 feet to the total width. It is assumed that all drilling locations will remain open for the life of the RMP.

Table H-5: Total Foreseeable Surface Disturbance for New Wells in Region 2

DESCRIPTION	UNIT SURFACE DISTURBANCE (ACRES)	NUMBER	TOTAL SURFACE DISTURBANCE (ACRES)
Single-well location	5	5	25
Multi-well location	7	15	105
Access roads	3.6 acres/mi	20	72
Pipelines	1.2 acres/mi	10	12
		Total:	214

Noise

Each well is expected to take between 30 and 90 days to drill. During this time, high levels of noise will be generated by the diesel engines that power the drilling rig, as well as from the draworks, drawworks brake, and racking of pipe. The racking of pipe and drawworks brake are higher pitched noises that typically travel further and are more difficult to mitigate than sources such as diesel engines. All diesel engines will use mufflers per standard industry practice. Up to two drilling rigs could be in operation simultaneously.

Air Quality

Diesel engine exhaust and dust are the primary impacts to air quality from the drilling of wells. Dust emissions are reduced by watering the access roads and wellpads.

Ground Water

Geothermal wells include multiple casing strings at shallow depths where aquifers are likely to occur. All injection wells are required to be tested periodically to ensure the mechanical integrity of the wellbore. The exact type and frequency of test will be based on the conditions that are encountered.

H.1.3.3 Power plants

Surface Disturbance

It is anticipated that up to 3 new binary-cycle powerplants will be built to utilize the hot water from the 6000 acres of new leases. For the purpose of this RFD, it will be assumed that all 3 powerplants will be on land that overlays the new lease areas. The powerplants will be in the 10-20 MegaWatt (MW) range.

In a binary cycle, hot water from the wells is gathered and delivered to a heat exchanger located at the power plant site. The heat exchanger transfers heat from the hot water to a secondary fluid such as iso-butane or iso-pentane. After flowing through the heat exchanger, the cooled geothermal water is sent to injection wells where it is returned to the reservoir. The hot secondary fluid flashes into a vapor phase and is sent through a turbine. Electricity is created from a generator that is attached to the turbine shaft. After passing through the turbine, the secondary fluid is condensed into a liquid phase and the process is repeated. As with a dry-steam facility, cold water is circulated through the condenser to further remove heat from the secondary fluid. From the condenser, the circulating water can either be sent to a conventional cooling tower, which uses evaporation, or to an air-cooled unit. Because the binary cycle does not result in any net removal of geothermal water, the cooling tower process relies on outside water sources.

Each plant would require about 10 acres, which would be 15 acres of total surface disturbance including cut and fill. Each plant would also require one mile of access road and 5 miles of new transmission line to intertie with existing transmission lines. It is assumed that the access road will require 30 feet of surface disturbance, which includes cut and fill. Transmission intertie lines require 100' of initial surface disturbance; however, once the lines are constructed all but a 20' access road would be reclaimed with grass and brush.

Table H-6: Total Surface Disturbance for Powerplants in Region 2

DESCRIPTION	UNIT SURFACE DISTURBANCE (ACRES)	NUMBER	TOTAL SURFACE DISTURBANCE (ACRES)
Powerplant location	15	3	45
Access roads	3.6 ac/mi	3	11
Transmission lines - initial	12.1 ac/mi	15	182
Transmission lines - final	2.4 acres/mi	15	36
		Total:	238 (initial) 92 (final)

Noise

Powerplant noise usually entails a constant low-level hum primarily created by the cooling tower fans.

Air Quality

Because the binary cycle is a closed loop process, the geothermal fluid is never exposed to the atmosphere and there are no significant sources of air pollution.

H.1.3.4 Direct Use Facilities

Surface Disturbance

It is anticipated that up to 4 new direct use facilities will be built to utilize the hot water from the 6000 acres of new leases. For the purpose of this RFD, it will be assumed that all 4 facilities will be on land that overlays the new lease areas.

A direct use facility uses the heat without converting it to electricity. The heat is typically used for space heating in greenhouses, fruit and vegetable drying facilities, and residential and commercial structures. In addition, the heat may be used in fish farms, to melt snow, or in industrial process such as pre-heating boiler feed water.

In each case, hot water from one or more wells is gathered and delivered to the facility, where it flows through a heat exchanger. Heat is then transferred from the hot water to whatever process is utilizing the heat. The cooler geothermal water is then returned to the reservoir through injection wells. In come cases, the effluent is disposed of on the surface; however, this would not be allowed for direct use facilities built in the Ukiah Field Office.

Each facility would require about 10 acres, which would be 15 acres of total surface disturbance including cut and fill. Each plant would also require one mile of 30-foot wide access road, which includes cut and fill.

Table H-7: Total Surface Disturbance for Direct Use Facilities in Region 2

DESCRIPTION	UNIT SURFACE DISTURBANCE (ACRES)	NUMBER	TOTAL SURFACE DISTURBANCE (ACRES)
Facility location	15	4	60
Access roads	3.6 ac/mi	4	14
		Total:	74

Air Quality

Because direct use heating is a closed loop process, the geothermal fluid is never exposed to the atmosphere and there are no significant sources of air pollution.

H.1.4 Region 3 – Rest of the Field Office

Region 3 includes the areas within the Ukiah Field Office that are outside the boundaries of the The Geysers-Calistoga KGRAs.

Development within Region 3 is assumed to be minimal. It is anticipated that 4000 acres of new leases will be issued. Geophysical exploration will occur, including the drilling of up to 10 temperature gradient wells. Exploration is most likely to occur on the 4000 acres of new leases, but off-lease exploration could also occur. (a lease is not required to perform geophysical exploration or to drill a temperature gradient well). One of the leases will have sufficient resources to heat a small direct use facility, requiring 2 production wells and 2 injection wells to be drilled.

H.1.4.1 Exploration

As with oil and gas, geophysical/geochemical exploration can take place on leased or unleased public land. The operator must comply with all terms and conditions of permits, regulations, and other requirements, including reclamation, prescribed by the authorized officer. Monitoring for compliance with these requirements would be done during operations and upon their completion. The following exploration techniques are often employed in geothermal prospecting:

- Passive Microseismic: Small seismometers buried at a shallow depth (hand-dug holes) transmit signals from naturally occurring, extremely minor seismic activity (microearthquakes) to an amplifier on the surface. Stations are located away from roads to avoid the effects of traffic. These units are often backpacked into areas inaccessible to vehicles.
- Active Seismic: Same as passive microseismic, except that seismic events are artificially induced. This can be done with something as benign as a metal plate and sledge hammers, or at the most, shallow wells would be drilled to 20'-100' deep and small explosive charges would be set off in the holes. The holes would then be filled and reclaimed.
- Telluric: A string of receivers record the variations in the natural electric currents in the earth. No transmitter is required. Small trucks are used to transport the crew and equipment.
- Radiometric: Radioactive emissions (generally radon gas) associated with geothermal resources are measured using a hand-held scintillometer, often at hot spring locations. Another method involves placing plastic cups containing small detector strips sensitive to alpha radiation either on

the surface or in shallow hand-dug holes. If holes are dug, they are covered, and the cups are left in place for 3 to 4 weeks. At the end of the sampling period, the cups are retrieved and all holes are backfilled. These surveys can be conducted by walking to the sites or with the aid of light vehicles.

- Geochemical surveys: Geochemical surveys are usually conducted at hot springs by taking water samples directly from the spring. Mercury associated with geothermal resources is often sampled using hand tools. These surveys can be conducted by walking to the sites or with the aid of light vehicles.

The total surface disturbance of all the above geophysical techniques done in Region 2 is anticipated to be less than 2 acres. Many of the above activities could be considered as "casual use" requiring no action for BLM.

In addition to the above geophysical techniques, temperature gradient holes are used to determine the rate of change of temperature with respect to depth. Temperature gradient holes usually vary in diameter from about 3.5 to 4.5 inches, and from a few hundred feet to 5,000 feet in depth. They are drilled using rotary or coring methods. Approximately 4 to 5 acres/drill hole would be disturbed. This disturbance includes the drilling location and access road. A typical drill site could contain a drill rig (most likely truck-mounted), water tank(s), fuel tank, supply trailer, and a small trailer for the workers. Drilling mud and fluids would be contained in earthen pits or steel tanks.

Other equipment that could be used includes large flatbed trucks to haul drill rod, casing, and other drilling supplies; in some cases special cementing and bulk cement trucks; and two small vehicles for transporting workers. Existing roads would be used if possible. It is likely that short spur roads (usually less than ½ mile) would be bladed for each hole. All holes would be plugged and abandoned to protect both surface and subsurface resources, including aquifers, and reclamation of disturbed areas would be required, unless some benefit to the public could be gained (for example, a water well or camping area). Detailed drilling programs that cover drilling methods, casing and cementing programs, well control, and plugging and abandonment would be required. It is expected that 10 temperature gradient holes would be drilled during the life of this plan, which would result in a total surface disturbance of 50 acres.

H.1.4.2 New production wells

Surface Disturbance

Up to 4 new wells will be drilled on the 4000 acres of new leases. These wells will normally range in depth from 1,000' to 4,000'. Because there is no direct correlation between depth and surface disturbance, this depth range should not be considered a limiting factor when implementing the Ukiah RMP. These wells may be used for production, injection, or heat exchange. All wells will be permitted by BLM using standard review methods that ensure 1) protection of ground water, 2) protection of public safety, and 3) that the environment is not unduly damaged.

The wells will be drilled from 4 drilling locations. Some of the single-well pads may be converted into multi-well pads if sufficient quantities of hot water are discovered in those areas. The single-well locations require approximately 5 acres of surface disturbance, which includes cut and fill. Multi-well locations require 7 acres of total surface disturbance. Each location will also need 1 mile of 30-foot wide access

road, which includes cut and fill. It is assumed that all drilling locations will remain open for the life of the RMP.

Table H-8: Total Foreseeable Surface Disturbance for New Wells in Region 3

DESCRIPTION	UNIT SURFACE DISTURBANCE (ACRES)	NUMBER	TOTAL SURFACE DISTURBANCE (ACRES)
Single-well location	5	2	10
Multi-well location	7	2	14
Access roads	3.6 acres/mi	4	14
		Total:	38

Noise

Each well is expected to take between 30 and 90 days to drill. During this time, high levels of noise will be generated by the diesel engines that power the drilling rig, as well as from the draworks, drawworks brake, and racking of pipe. The racking of pipe and drawworks brake are higher pitched noises that typically travel further and are more difficult to mitigate than sources such as diesel engines. All diesel engines will use mufflers per standard industry practice.

Air Quality

Diesel engine exhaust and dust are the primary impacts to air quality from the drilling of wells. Dust emissions are reduced by watering the access roads and wellpads.

Ground Water

Geothermal wells at include multiple casing strings at shallow depths where aquifers are likely to occur. All injection wells are required to be tested periodically to ensure the mechanical integrity of the wellbore. The exact type and frequency of test will be based on the conditions that are encountered.

H.1.4.3 Direct Use Facilities

Surface Disturbance

It is anticipated that one new direct use facility will be built to utilize the hot water from the 4000 acres of new leases. For the purpose of this RFD, it will be assumed that the facility will be on land that overlays the new lease areas.

A direct use facility uses the heat without converting it to electricity. The heat is typically used for space heating in greenhouses, fruit and vegetable drying facilities, and residential and commercial structures. In addition, the heat may be used in fish farms, to melt snow, or in industrial process such as pre-heating boiler feed water.

In each case, hot water from one or more wells is gathered and delivered to the facility, where it flows through a heat exchanger. Heat is then transferred from the hot water to whatever process is utilizing the heat. The cooler geothermal water is then returned to the reservoir through injection wells. In some

cases, the effluent is disposed of on the surface; however, this would not be allowed for direct use facilities built in the Ukiah Field Office.

The facility would require about 10 acres, which would be 15 acres of total surface disturbance including cut and fill. The plant would also require one mile of 30-foot wide access road, which includes cut and fill.

Table H-9: Total Surface Disturbance for Direct Use Facilities in Region 3

DESCRIPTION	UNIT SURFACE DISTURBANCE (ACRES)	NUMBER	TOTAL SURFACE DISTURBANCE (ACRES)
Facility location	15	1	15
Access roads	3.6 ac/mi	1	4
		Total:	19

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APPENDIX I

WIND ENERGY BEST MANAGEMENT PRACTICES T

APPENDIX I

I.1 WIND ENERGY BEST MANAGEMENT PRACTICES

I.1.1 Introduction

The following BMPs would be applied to all wind energy development projects to establish environmentally sound and economically feasible mechanisms to protect and enhance natural and cultural resources. These BMPs would be adopted as required elements of project-specific PODs and/or as ROW grant stipulations. They are categorized by development activity: site monitoring and testing, development of the POD, construction, operation, and decommissioning. The BMPs for development of the POD identify required elements of the POD needed to address potential impacts associated with subsequent phases of development.

Some of the proposed BMPs address issues that are not unique to wind energy development but that are more universal in nature, such as road construction and maintenance, wildlife management, hazardous materials and waste management, cultural resource management, and pesticide use and integrated pest management. For the most part, however, the level of detail provided by the BMPs is less specific than that provided in other, existing BLM program-specific mitigation guidance documents. As required by proposed policy, mitigation measures identified in or required by these existing program-specific guidance documents would be applied, as appropriate, to wind energy development projects; however, they are not discussed in detail in the programmatic BMPs proposed here.

In summary, stipulations governing specific wind energy projects would be derived from a number of sources: (1) the proposed BMPs discussed in this section; (2) other, existing and relevant program-specific mitigation guidance; and (3) the mitigation measures. Guidelines for applying and selecting project-specific requirements include determining whether the measure would (1) ensure compliance with relevant statutory or administrative requirements, (2) minimize local impacts associated with siting and design decisions, (3) promote post-construction stabilization of impacts, (4) maximize restoration of previous habitat conditions, (5) minimize cumulative impacts, or (6) promote economically feasible development of wind energy on BLM land.

I.1.2 Site Monitoring and Testing

- The area disturbed by installation of meteorological towers (i.e., footprint) shall be kept to a minimum.
- Existing roads shall be used to the maximum extent feasible. If new roads are necessary, they shall be designed and constructed to the appropriate standard.
- Meteorological towers shall not be located in or near sensitive habitats or in areas where ecological resources known to be sensitive to human activities (e.g., prairie grouse) are present. Installation of towers shall be scheduled to avoid disruption of wildlife reproductive activities or other important behaviors.

I.1.3 Plan of Development Preparation

I.1.3.1 General

- The BLM and operators shall contact appropriate agencies, property owners, and other stakeholders early in the planning process to identify potentially sensitive land uses and issues, rules that govern wind energy development locally, and land use concerns specific to the region.
- Available information describing the environmental and sociocultural conditions in the vicinity of the proposed project shall be collected and reviewed as needed to predict potential impacts of the project.
- The project shall be planned to avoid, if possible, minimize, or mitigate impacts to wildlife, habitat, visual resources, surface water resources, cultural and historical resources, other valued resources, and other land use.
- The Federal Aviation Administration (FAA)-required notice of proposed construction shall be made as early as possible to identify any air safety measures that would be required.
- To plan for efficient use of the land, necessary infrastructure requirements shall be consolidated wherever possible, and current transmission and market access shall be evaluated carefully.
- The project shall be planned to utilize existing roads and utility corridors to the maximum extent feasible, and to minimize the number and length/size of roads, lay-down areas, and borrow areas.
- A monitoring program shall be developed to ensure that environmental conditions are monitored during the construction, operation, and decommissioning phases. The monitoring program requirements, including adaptive management strategies, shall be established at the project level to ensure that potential adverse impacts of wind energy development are mitigated. The monitoring program shall identify the monitoring requirements for each environmental resource present at the site, establish metrics against which monitoring observations can be measured, identify potential mitigation measures, and establish protocols for incorporating monitoring observations and additional mitigation measures into standard operating procedures and BMPs.
- "Good housekeeping" procedures shall be developed to ensure that during operations the site will be kept clean of debris, garbage, fugitive trash or waste, and graffiti to prohibit scrap heaps and dumps; and to minimize storage yards.

I.1.3.2 Wildlife and Other Ecological Resources

- Operators shall review existing information on species and habitats in the vicinity of the project area to identify potential concerns.
- Operators shall conduct surveys for federally and/or state-protected species and other species of concern (including special status plant and animal species) within the project area and design the project to avoid, if possible, minimize, or mitigate impacts to these resources.
- Operators shall identify important, sensitive, or unique habitats in the vicinity of the project and design the project to avoid, if possible, minimize, or mitigate impacts to these habitats (e.g.,

locate the turbines, roads, and ancillary facilities in the least environmentally sensitive areas; i.e., away from riparian habitats, streams, wetlands, drainages, or critical wildlife habitats).

- BLM shall prohibit the disturbance of any population of federally listed plant species.
- Operators shall evaluate avian and bat use of the project area and, design the project to minimize or mitigate the potential for bird and bat strikes (e.g., development shall not occur in riparian habitats and wetlands). Scientifically rigorous avian and bat use surveys shall be conducted; the amount and extent of ecological baseline data required shall be determined on a project basis.
- Turbines shall be configured to avoid landscape features known to attract raptors.
- Operators shall determine the presence of bat colonies and avoid placing turbines near known bat hibernation, breeding, and maternity/nursery colonies; in known migration corridors; or in known flight paths between colonies and feeding areas.
- Operators shall determine the presence of active raptor nests (i.e., raptor nests used during the breeding season). Measures to reduce raptor use at a project site (e.g., minimize road cuts, maintain either no vegetation or nonattractive plant species around the turbines) shall be considered.
- A habitat restoration plan shall be developed to avoid, if possible, minimize, or mitigate negative impacts on vulnerable wildlife while maintaining or enhancing habitat values for other species. The plan shall identify revegetation, soil stabilization, and erosion reduction measures that shall be implemented to ensure that all temporary use areas are restored. The plan shall require that restoration occur as soon as possible after completion of activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.
- Procedures shall be developed to mitigate potential impacts to special status species. Such measures could include avoidance, relocation of project facilities or lay-down areas, and/or relocation of biota.
- Facilities shall be designed to discourage their use as perching or nesting substrates by birds. For example, power lines and poles shall be configured to minimize raptor electrocutions and discourage raptor and raven nesting and perching.

I.1.3.3 Visual Resources

- The public shall be involved and informed about the visual site design elements of the proposed wind energy facilities. Possible approaches include conducting public forums for disseminating information, offering organized tours of operating wind developments, and using computer simulation and visualization techniques in public presentations.
- Turbine arrays and turbine design shall be integrated with the surrounding landscape. Design elements to be addressed include clustering of turbines, visual uniformity, use of tubular towers, proportion and color of turbines, nonreflective paints, and prohibition of commercial messages on turbines.
- Other site design elements shall be integrated with the surrounding landscape. Elements to address include minimizing the profile of the ancillary structures, burial of cables, prohibition of

commercial symbols, and security lighting. Regarding lighting, efforts shall be made to minimize the need for and amount of lighting on ancillary structures.

I.1.3.4 Roads

- An access road siting and management plan shall be prepared incorporating existing BLM standards regarding road design, construction, and maintenance such as those described in the BLM 9113 Manual (BLM 1985) and the *Surface Operating Standards for Oil and Gas Exploration and Development* (RMRCC 1989) (i.e., the Gold Book).

I.1.3.5 Transportation

- A comprehensive transportation plan shall be developed, particularly for the transport of turbine components, main assembly cranes, and other large pieces of equipment. The plan shall consider specific object sizes, weights, origin, destination, and unique handling requirements and shall evaluate alternative transportation approaches. In addition, the process to be used to comply with unique state requirements and to obtain all necessary permits shall be clearly identified.
- A traffic management plan shall be prepared for the site access roads to ensure that no hazards would result from the increased truck traffic and that traffic flow would not be adversely impacted. This plan shall incorporate measures such as informational signs, flaggers when equipment may result in blocked throughways, and traffic cones to identify any necessary changes in temporary lane configuration.

I.1.3.6 Noise

- Proponents of a wind energy development project shall take measurements to assess the existing background noise levels at a given site and compare them with the anticipated noise levels associated with the proposed project.

I.1.3.7 Noxious Weeds and Pesticides

- Operators shall develop a plan for control of noxious weeds and invasive species, which could occur as a result of new surface disturbance activities at the site. The plan shall address monitoring, education of personnel on weed identification, the manner in which weeds spread, and methods for treating infestations. The use of certified weed-free mulching and the cleaning of vehicles prior to arrival at a location to avoid the introduction of invasive weeds shall be required.
- If pesticides are used on the site, an integrated pest management plan shall be developed to ensure that applications would be conducted within the framework of BLM and DOI policies and entail only the use of EPA-registered pesticides. Pesticide use shall be limited to nonpersistent, immobile pesticides and shall only be applied in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications.

I.1.3.8 Cultural/Historic Resources

- The BLM shall consult with Indian Tribal governments early in the planning process to identify issues regarding the proposed wind energy development, including issues related to the presence of cultural properties, access rights, disruption to traditional cultural practices, and impacts to visual resources important to the Tribe(s).
- The presence of archaeological sites and historic properties in the area of potential effect shall be determined on the basis of a records search of recorded sites and properties in the area and/or, depending on the extent of existing information, an archaeological survey. Archaeological sites and historic properties present in the area of potential effect shall be reviewed to determine whether they meet the criteria of eligibility for listing on the *National Register of Historic Places* (NRHP).
- If cultural resources are present at the site, or if areas with a high potential to contain cultural material have been identified, a cultural resources management plan (CRMP) shall be developed. This plan shall address mitigation activities to be taken for cultural resources found at the site. Avoidance of the area is always the preferred mitigation option. Other mitigation options include archaeological survey and excavation (as warranted) and monitoring. If an area exhibits a high potential, but no artifacts were observed during an archaeological survey, monitoring by a qualified archaeologist could be required during all excavation and earthmoving in the high-potential area. A report needs to be prepared documenting these activities. The CRMP also shall (1) establish a monitoring program, (2) identify measures to prevent potential looting/vandalism or erosion impacts, and (3) address the education of workers and the public to make them aware of the consequences of unauthorized collection of artifacts and destruction of property on public land.

I.1.3.9 Paleontological Resources

- Operators shall determine whether paleontological resources exist in a project area on the basis of the sedimentary context of the area, a records search for past paleontological finds in the area, and/or, depending on the extent of existing information, a paleontological survey.
- If paleontological resources are present at the site, or if areas with a high potential to contain paleontological material have been identified, a paleontological resources management plan shall be developed. This plan shall include a mitigation plan for collection of the fossils; mitigation could include avoidance, removal of fossils, or monitoring. If an area exhibits a high potential but no fossils were observed during survey, monitoring by a qualified paleontologist could be required during all excavation and earthmoving in the sensitive area. A report needs to be prepared documenting these activities. The paleontological resources management plan also shall (1) establish a monitoring program, (2) identify measures to prevent potential looting/vandalism or erosion impacts, and (3) address the education of workers and the public to make them aware of the consequences of unauthorized collection of fossils on public land.

I.1.3.10 Hazardous Materials and Waste Management

- Operators shall develop a hazardous materials management plan addressing storage, use, transportation, and disposal of each hazardous material anticipated to be used at the site. The

plan shall identify all hazardous materials that would be used, stored, or transported at the site. It shall establish inspection procedures, storage requirements, storage quantity limits, inventory control, nonhazardous product substitutes, and disposition of excess materials. The plan shall also identify requirements for notices to federal and local emergency response authorities and include emergency response plans.

- Operators shall develop a waste management plan identifying the waste streams that are expected to be generated at the site and addressing hazardous waste determination procedures, waste storage locations, waste-specific management and disposal requirements, inspection procedures, and waste minimization procedures. This plan shall address all solid and liquid wastes that may be generated at the site.
- Operators shall develop a spill prevention and response plan identifying where hazardous materials and wastes are stored on site, spill prevention measures to be implemented, training requirements, appropriate spill response actions for each material or waste, the locations of spill response kits on site, a procedure for ensuring that the spill response kits are adequately stocked at all times, and procedures for making timely notifications to authorities.

I.1.3.11 Storm Water

- Operators shall develop a storm water management plan for the site to ensure compliance with applicable regulations and prevent off-site migration of contaminated storm water or increased soil erosion.

I.1.3.12 Human Health and Safety

- A safety assessment shall be conducted to describe potential safety issues and the means that would be taken to mitigate them, including issues such as site access, construction, safe work practices, security, heavy equipment transportation, traffic management, emergency procedures, and fire control.
- A health and safety program shall be developed to protect both workers and the general public during construction, operation, and decommissioning of a wind energy project. Regarding occupational health and safety, the program shall identify all applicable federal and state occupational safety standards, establish safe work practices for each task (e.g., requirements for personal protective equipment and safety harnesses; Occupational Safety and Health Administration [OSHA] standard practices for safe use of explosives and blasting agents; measures for reducing occupational electric and magnetic fields [EMF] exposures), establish fire safety evacuation procedures, and define safety performance standards (e.g., electrical system standards, lightning protection standards). The program shall include a training program to identify hazard training requirements for workers for each task and establish procedures for providing required training to all workers. Documentation of training and a mechanism for reporting serious accidents to appropriate agencies shall be established.
- Regarding public health and safety, the health and safety program shall establish a safety zone or setback for wind turbine generators from residences and occupied buildings, roads, rights of ways, and other public access areas that is sufficient to prevent accidents resulting from the operation of wind turbine generators. It shall identify requirements for temporary fencing around

staging areas, storage yards, and excavations during construction or decommissioning activities. It shall also identify measures to be taken during the operations phase to limit public access to facilities (e.g., permanent fencing would be installed only around electrical substations, and turbine tower access doors would be locked).

- Operators shall consult with local planning authorities regarding increased traffic during the construction phase, including an assessment of the number of vehicles per day, their size, and type. Specific issues of concern (e.g., location of school bus routes and stops) shall be identified and addressed in the traffic management plan.
- If operation of the wind turbines is expected to cause significant adverse impacts to nearby residences and occupied buildings from shadow flicker, low-frequency sound, or EMF, site-specific recommendations for addressing these concerns shall be incorporated into the project design (e.g., establishing a sufficient setback from turbines).
- The project shall be planned to minimize electromagnetic interference (EMI) (e.g., impacts to radar, microwave, television, and radio transmissions) and comply with FCC regulations. Signal strength studies shall be conducted when proposed locations have the potential to impact transmissions. Potential interference with public safety communication systems (e.g., radio traffic related to emergency activities) shall be avoided.
- The project shall be planned to comply with FAA regulations, including lighting regulations, and to avoid potential safety issues associated with proximity to airports, military bases or training areas, or landing strips.
- Operators shall develop a fire management strategy to implement measures to minimize the potential for a human-caused fire.

I.1.4 Construction

I.1.4.1 General

- All control and mitigation measures established for the project in the POD and the resource-specific management plans that are part of the POD shall be maintained and implemented throughout the construction phase, as appropriate.
- The area disturbed by construction and operation of a wind energy development project (i.e., footprint) shall be kept to a minimum.
- The number and size/length of roads, temporary fences, lay-down areas, and borrow areas shall be minimized.
- Topsoil from all excavations and construction activities shall be salvaged and reapplied during reclamation.
- All areas of disturbed soil shall be reclaimed using weed-free native grasses, forbs, and shrubs. Reclamation activities shall be undertaken as early as possible on disturbed areas.
- All electrical collector lines shall be buried in a manner that minimizes additional surface disturbance (e.g., along roads or other paths of surface disturbance). Surface lines may be used in cases where burial of lines would result in further habitat disturbance.

- Operators shall identify unstable slopes and local factors that can induce slope instability (such as groundwater conditions, precipitation, earthquake activities, slope angles, and the dip angles of geologic strata). Operators also shall avoid creating excessive slopes during excavation and blasting operations. Special construction techniques shall be used where applicable in areas of steep slopes, erodible soil, and stream channel crossings.
- Erosion controls that comply with county, state, and federal standards shall be applied. Practices such as jute netting, silt fences, and check dams shall be applied near disturbed areas.

I.1.4.2 Wildlife

- Guy wires on permanent meteorological towers shall be avoided.
- In accordance with the habitat restoration plan, restoration shall be undertaken as soon as possible after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.
- All construction employees shall be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship, nesting) seasons. In addition, pets shall not be permitted on-site.

I.1.4.3 Visual

- Operators shall reduce visual impacts during construction by minimizing areas of surface disturbance, controlling erosion, using dust suppression techniques, and restoring exposed soils as closely as possible to their original contour and vegetation.

I.1.4.4 Roads

- Existing roads shall be used, but only if in safe and environmentally sound locations. If new roads are necessary, they shall be designed and constructed to the appropriate standard and be no higher than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles). Excessive grades on roads, road embankments, ditches, and drainages shall be avoided, especially in areas with erodible soils. Special construction techniques shall be used, where applicable. Abandoned roads and roads that are no longer needed shall be recontoured and revegetated.
- Access roads and on-site roads shall be surfaced with aggregate materials, wherever appropriate.
- Access roads shall be located to follow natural contours and minimize side hill cuts.
- Roads shall be located away from drainage bottoms and avoid wetlands.
- Roads shall be designed so that changes to surface water runoff are avoided and erosion is not initiated.
- Access roads shall be located to minimize stream crossings. All structures crossing streams shall be located and constructed so that they do not decrease channel stability or increase water velocity. Operators shall obtain all applicable federal and state permits.

- Existing drainage systems shall not be altered, especially in sensitive areas such as erodible soils or steep slopes. Potential soil erosion shall be controlled at culvert outlets with appropriate structures. Catch basins, roadway ditches, and culverts shall be cleaned and maintained regularly.

I.1.4.5 Transportation

- Project personnel and contractors shall be instructed and required to adhere to speed limits commensurate with road types, traffic volumes, vehicle types, and site-specific conditions, to ensure safe and efficient traffic flow and to reduce wildlife collisions and disturbance and airborne dust.
- Traffic shall be restricted to the roads developed for the project. Use of other unimproved roads shall be restricted to emergency situations.
- Signs shall be placed along construction roads to identify speed limits, travel restrictions, and other standard traffic control information. To minimize impacts on local commuters, consideration shall be given to limiting construction vehicles traveling on public roadways during the morning and late afternoon commute time.

I.1.4.6 Air Emissions

- Dust abatement techniques shall be used on unpaved, unvegetated surfaces to minimize airborne dust.
- Speed limits (e.g., 25 mph [40 km/h]) shall be posted and enforced to reduce airborne fugitive dust.
- Construction materials and stockpiled soils shall be covered if they are a source of fugitive dust.
- Dust abatement techniques shall be used before and during surface clearing, excavation, or blasting activities.

I.1.4.7 Excavation and Blasting Activities

- Operators shall gain a clear understanding of the local hydrogeology. Areas of groundwater discharge and recharge and their potential relationships with surface water bodies shall be identified.
- Operators shall avoid creating hydrologic conduits between two aquifers during foundation excavation and other activities.
- Foundations and trenches shall be backfilled with originally excavated material as much as possible. Excess excavation materials shall be disposed of only in approved areas or, if suitable, stockpiled for use in reclamation activities.
- Borrow material shall be obtained only from authorized and permitted sites. Existing sites shall be used in preference to new sites.
- Explosives shall be used only within specified times and at specified distances from sensitive wildlife or streams and lakes, as established by the BLM or other federal and state agencies.

I.1.4.8 Noise

- Noisy construction activities (including blasting) shall be limited to the least noise-sensitive times of day (i.e., daytime only between 7 a.m. and 10 p.m.) and weekdays.
- All equipment shall have sound-control devices no less effective than those provided on the original equipment. All construction equipment used shall be adequately muffled and maintained.
- All stationary construction equipment (i.e., compressors and generators) shall be located as far as practicable from nearby residences.
- If blasting or other noisy activities are required during the construction period, nearby residents shall be notified in advance.

I.1.4.9 Cultural and Paleontological Resources

- Unexpected discovery of cultural or paleontological resources during construction shall be brought to the attention of the responsible BLM authorized officer immediately. Work shall be redirected to avoid further harm, while the resources are evaluated and appropriate mitigation strategies are developed.

I.1.4.10 Hazardous Materials and Waste Management

- Secondary containment shall be provided for all on-site hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) shall be a temporary activity occurring only for as long as is needed to support construction and decommissioning activities.
- Wastes shall be properly containerized and removed periodically for disposal at appropriate off-site permitted disposal facilities.
- In the event of an accidental release to the environment, the operator shall document the event, including a root cause analysis, appropriate corrective actions taken, and a characterization of the resulting environmental or health and safety impacts. Documentation of the event shall be provided to the BLM authorized officer and other federal and state agencies, as required.
- Any wastewater generated in association with temporary, portable sanitary facilities shall be periodically removed by a licensed hauler and introduced into an existing municipal sewage treatment facility. Temporary, portable sanitary facilities provided for construction crews shall be adequate to support expected on-site personnel and shall be removed at completion of construction activities.

I.1.4.11 Public Health and Safety

- Temporary fencing shall be installed around staging areas, storage yards, and excavations during construction to limit public access.

I.1.5 Operation

I.1.5.1 General

- All control and mitigation measures established for the project in the POD and the resource-specific management plans that are part of the POD shall be maintained and implemented throughout the operational phase, as appropriate. These control and mitigation measures shall be reviewed and revised, as needed, to address changing conditions or requirements at the site, throughout the operational phase. This adaptive management approach would help ensure that impacts from operations are kept to a minimum.
- Inoperative turbines shall be repaired, replaced, or removed in a timely manner. Requirements to do so shall be incorporated into the due diligence provisions of the ROW authorization. Operators will be required to demonstrate due diligence in the repair, replacement, or removal of turbines; failure to do so could result in termination of the ROW authorization.

I.1.5.2 Wildlife

- Employees, contractors, and site visitors shall be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship, nesting) seasons. In addition, any pets shall be controlled to avoid harassment and disturbance of wildlife.
- Observations of potential wildlife problems, including wildlife mortality, shall be reported to the BLM authorized officer immediately.

I.1.5.3 Ground Transportation

- On-going ground transportation planning shall be conducted to evaluate road use, minimize traffic volume, and ensure that roads are maintained adequately to minimize associated impacts.

I.1.5.4 Monitoring Program

- Protocols defined in the site monitoring program for incorporating monitoring program observations and additional mitigation measures into standard operating procedures and BMPs to minimize future environmental impacts shall be implemented.
- Results of monitoring program efforts shall be provided to the BLM authorized officer.

I.1.5.5 Public Health and Safety

- Permanent fencing shall be installed and maintained around electrical substations, and turbine tower access doors shall be locked to limit public access.
- In the event an installed wind energy development project results in EMI, the operator shall work with the owner of the impacted communications system to resolve the problem. Additional warning information may also need to be conveyed to aircraft with onboard radar systems so that echoes from wind turbines can be quickly recognized.

I.1.6 Decommissioning

I.1.6.1 General

- Prior to the termination of the ROW lease, a decommissioning plan shall be developed and approved by BLM. The decommissioning plan shall include a site reclamation plan and monitoring program.
- All management plans, BMPs, and stipulations developed for the construction phase shall be applied to similar activities during the decommissioning phase.
- All turbines and ancillary structures shall be removed from the site.
- Topsoil from all decommissioning activities shall be salvaged and reapplied during final reclamation.
- All areas of disturbed soil shall be reclaimed using weed-free native shrubs, grasses, and forbs.
- The vegetation cover, composition, and diversity shall be restored to values commensurate with the ecological setting.

APPENDIX J

REASONABLE FORESEEABLE DEVELOPMENT SCENARIO – WIND ENERGY

APPENDIX J

J.1 REASONABLE FORESEEABLE DEVELOPMENT SCENARIO – WIND ENERGY

J.1.1 Introduction

BLM worked with the Department of Energy's National Renewable Energy Laboratory in completing this assessment. It draws on local knowledge, industry interest, wind resource data, analysis from the Final Programmatic Environmental Impact Statement on Wind Energy Development (2005), and staff specialist analyses.

J.1.2 Background and Assumptions

1. Wind resource data used was produced in 2002 with a 200 m cell resolution, and represents annual average wind power density at 50 m above ground level. The accuracy of the resource values is estimated to be +/- 20%, based on validation studies of these model results in several states/regions using available wind measurement data. In defining the likely areas of wind development, the resource was limited to those areas modeled to have an annual wind resource of 350 W/m^2 or better (mid-class 3). Generally, small and/or isolated areas of high resource were not included in the potential wind capacity estimates.
2. Based on limited time available to conduct analysis, information from BLM personnel familiar with the areas of interest was used to estimate prevailing wind direction and frequency. It would be preferable to gather available measured and modeled wind data to better estimate these parameters. This information could also be used to better estimate local variation in the modeled resource estimates.
3. Presence of roads and transmission lines was examined, but was not necessarily limiting. Some additional discussion of these factors appears in each area section below. Transmission line capacity availability was not examined.
4. BLM specified use of 1.5 MW turbine and exclusion of areas with slope > 15%. The 1.5 MW GE wind turbine has a rotor diameter of 70.5 – 77 m (70.5 in more energetic sites). Use of different turbine sizes will result in different capacity estimates. For example, a 2.5 MW GE wind turbine has a rotor diameter of 88 – 94 m. With open spacing, the 67% increase in turbine capacity needs about 20% more linear area between turbines.
5. A range of values is given representing an open 1.5 MW turbine spacing (7-10 rotor diameters, ~650 m) and a tight 1.5 MW turbine spacing (2-3 rotor diameters, ~200 m) within a line of wind turbines. Spacing between rows of turbines is estimated at 7-10 rotor diameters. In the areas of interest, the resource areas are all ridge crest and do not appear wide enough to support multiple rows of turbines. Assuming consistent wind direction, ridges that are perpendicular to the prevailing wind direction will be able to support tighter turbine spacing than ridges oriented parallel to the prevailing wind direction.

J.1.3 Areas of Interest

Berryessa development range: 37.5 to 123 MW (25 – 82 1.5 MW turbines)

The areas identified by BLM for NREL to examine can be divided into a northern area and southern area. The northern resource area is located on a generally north-south oriented ridge, while the southern resource area is a more northwest-to-southeast ridge line, about half the length of the northern resource area. The prevailing wind direction is generally consistent north to northwest unless a front is blowing through. Given that, the northern resource area is more favorably oriented to the wind resource and is likely to support a tighter turbine spacing than the southern resource area.

Both resource areas have limited road access (roads could be impassible during the year due to weather conditions) from private roads and ways closed to public access. The northern resource area is relatively close to transmission lines which proceed in an east-west alignment between the Central Valley and the California Coast. The southern resource area has an east-west alignment transmission line near the dam at Lake Berryessa.

Wind energy development on public lands in the Berryessa area is likely to fall in the lower third of the reported range. Even though ridge orientation is generally favorable to the prevailing wind direction, the west side of the main ridgeline is composed of a very sharp and steep cliff face known to produce erratic winds with lots of turbulence. Winds of this nature are not conducive to wind energy development. Approximately 60% of the estimated capacity is in the northern resource area, and 40% in the southern resource area.

Geysers development range: 16.5 to 180 MW (11 to 120 1.5 MW turbines)

There is a small ridge resource area in the northern portion, a long ridge resource area along the western edge, and a smaller ridge in the southern portion of the Geysers area. Several small resource areas in the central portion of the Geysers were not considered in the potential estimates. All of the resource areas have a northwest-to-southeast ridge orientation, though the southern ridge area curves to the east. Even though wind direction is variable, the prevailing direction is north to northwest and generally consistent.

The northern and western resource areas appear to have good public road access and transmission line access. The southern resource area appears to have private access roads (no legal public access) relatively close by, but no nearby transmission lines.

Wind energy development on public lands in the Geysers area is likely to fall in the lower third of the reported range, due to the somewhat favorable orientation of the ridges to the prevailing wind direction and the small amount of public lands along those ridges with wind energy potential. The bulk (at least 70%) of the lands identified for higher potential wind energy development at the Geysers is in private ownership. Therefore, the number of potential turbines is highly variable and can by increased significantly based on the extent of development off of the public lands. Approximately 55% of the estimated capacity is in the long western ridge resource area, 25% in the southern resource area, and 20% in the northern resource area.

Knoxville development range: 6 – 19.5 MW (4 to 13 1.5 MW turbines)

There are two resource areas in the Knoxville parcel, the larger in the northern portion and a smaller resource area in the southern portion. The northern resource area is located on a generally north-south oriented ridge, while the southern resource area is a more northwest-to-southeast ridge. The wind direction and frequency is variable in this parcel.

Both resource areas appear to have road access, but the roads are listed as 4 wheel drive roads and are not capable of supporting the equipment needed to install the turbines. The northern resource area is also relatively close to a wider, 2 wheel drive road. The northern site is somewhat near transmission lines, but the southern site does not appear to have transmission lines nearby.

Wind energy development on public lands in the Knoxville area is likely to fall in the lower third of the reported range, due to the variability of the wind resource. Approximately 75% of the estimated capacity is in the northern resource area, and 25% in the southern resource area.

Indian Valley/Walker Ridge development range: 6 – 109 MW (4 to 73 1.5 MW turbines)

There is one large resource area in the center of the Indian Valley parcel, with two smaller resource areas to the north and south that were not included in the potential estimates. The resource area is located on a generally north-south oriented ridge. Up to 7 smaller ridgelines oriented northwest to southeast come off of the main Walker Ridge ridgeline. The prevailing wind direction is west to northwest and generally consistent.

The resource area appears to have good road access. The main access road, referred to as the "Walker Ridge Road" is 18.5 miles long in a north-south orientation. This road is 25 feet in width and may require some improvements to support equipment needs for turbine installation. Walker Ridge Road remains open all year. The other roads in the area are 4-wheel drive only and would need significant improvement to support the equipment needs for turbine installation. There is a major east-west alignment transmission line along the southern area near highway 20, a major transportation corridor between the California Coast and the Central Valley.

Wind energy development on public lands in the Indian Valley/Walker Ridge area is likely to fall in the middle third of the reported range, due to the generally favorable orientation of the ridge to the prevailing wind direction, the availability of year around road access, and the proximity of an existing transmission line. All of the development potential is being considered on the public lands. The variation in the number of turbines is based on the wind resource level. With the exception of two fairly small areas, most of Walker Ridge is considered to fall within the medium to low range of the wind resource level.

J.1.4 Impact Assumptions and Analysis

Currently, most wind energy projects are utilizing a 1.5-MW wind turbine. Although such a turbine has the ability to generate a maximum of 1.5 megawatts under ideal operating conditions, the actual conditions related to wind speed at the proposed project area could vary considerably on a seasonal, daily, and site-specific basis. The proposed turbines have a horizontal axis with a three-bladed rotor. The turbines would be mounted on tubular steel towers with internal maintenance access ladders. The total height of the tower to the hub of the rotor blades is 65 meters (213 feet). The diameter of the rotor is 77

meters (253 feet). The total height of the turbine at the highest point of the rotor blade's rotation is 103.5 meters (340 feet). The rotor blades would turn at approximately 20 revolutions per minute at peak production. The base of the tower is approximately 5 meters (15 feet) in diameter. The tower and turbine would be painted in a color appropriate to the site and would have a non-reflective finish. Usually wind turbines are grouped along separate ridges in zones or strings, ranging in groupings from 2 to 16 towers. The spacing between individual towers within a string would be approximately twice the diameter of the rotor blades.

Depending on the soil and geotechnical conditions at each turbine site, the turbine tower could be mounted on a spread footing type foundation or a vertical mono-pier foundation. Excavation for the foundation would be required at each turbine site. Regardless of the foundation type used, the area of the foundation exposed at the surface would be only slightly larger than the diameter of the tower base. A pad-mounted transformer would be located adjacent to the base of each tower, requiring an approximately 2.5 meters (8 feet) by 2.5 meters (8 feet) concrete pad.

Electrical power generated by the wind turbines would be collected through a network of cables that would terminate at the project substation. Power from the turbines would be fed through a breaker panel located at the turbine base inside the tower and connected to a pad-mounted step-up transformer. The transformers would be connected to underground cables that would interconnect all of the turbines electrically. The underground cables would generally run at the edge of project roads and would typically be buried 1 to 1.25 meters (3 to 4 feet) deep. Due to terrain or to avoid excessively long runs, the collection cables could occasionally become overhead lines for relatively short distances. The collection cables would connect to larger feeder lines that would run to the main substation. At the substation, the electrical power from the turbines would be stepped up to transmission level at 230 kilovolts (kV). An overhead 230-kV transmission line would carry the electrical power from the substation to the regional transmission line. The size and design of that transmission line would be dependent on the geotechnical conditions at that site.

To operate and maintain the turbines, the proposed project would require a network of service roads to provide access to the turbines sites, the substation, the operation and maintenance facility, and other project facilities. These roads could range in width from approximately 5 to 10 meters (16 to 34 feet). To deliver large and heavy components and equipment to the turbine sites during the project construction, most project roads would need to be approximately 6 meters (20 feet) wide. To operate large equipment, including large truck- or track-mounted cranes, access roads approximately 10 meters (34 feet) wide would be required primarily within the turbine strings to provide access to each turbine site. A dust control plan pursuant to applicable regulations would be prepared and implemented to minimize airborne dust during project construction.

Additional impacts from wind energy development are contained in the Wind Energy Programmatic Final Environmental Impact Statement 2005.

APPENDIX K

WIND ENERGY POTENTIAL MAPS

APPENDIX K

K.1 WIND ENERGY POTENTIAL MAPS

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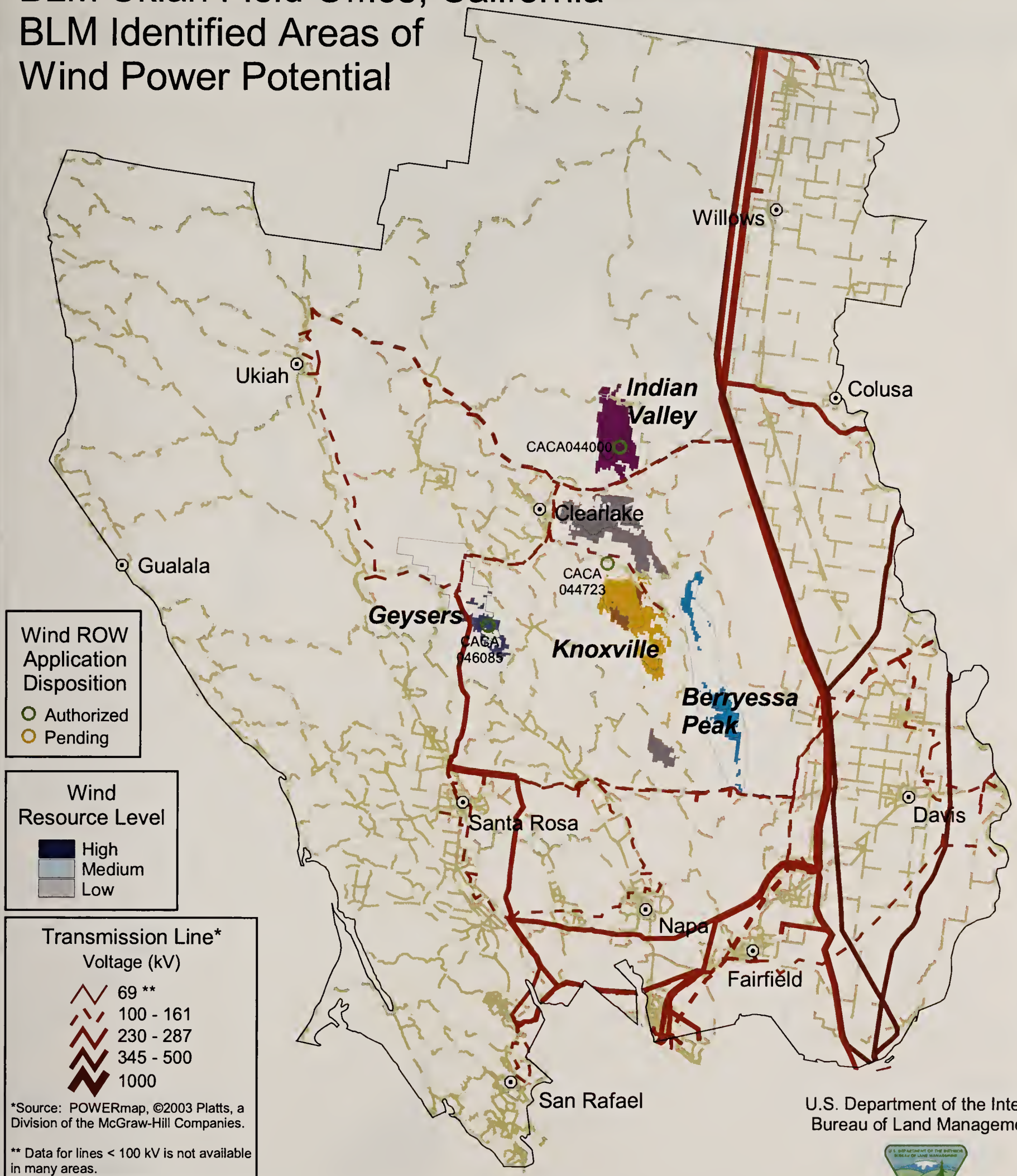
BLM Ukiah Field Office, California
BLM Identified Areas of Wind Power Potential



Wind ROW Application Disposition
- Authorized
- Pending

Wind Resource Level
- High
- Medium
- Low

Transmission Line*
Voltage (kV)
- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

*Source: POWERmap, ©2003 Platts, a Division of the McGraw-Hill Companies.

** Data for lines < 100 kV is not available in many areas.

- City or Town
- Paved Road
- Non-BLM Lands
- Excluded Area (wilderness area, wilderness study area, national monument, or national conservation area)

The wind power estimates for this map were produced by TrueWind Solutions using the Mesomap system and historical weather data. It has been validated with available surface data by NREL and wind energy meteorological consultants.

10 0 10 20 Miles

U.S. Department of the Interior
Bureau of Land Management

U.S. Department of Energy
National Renewable Energy Laboratory

NREL

08-APR-2005 10.1.6R

Wind Resource Potential
Knoxville Recreation Area, BLM Ukiah Field Office, CA

CACA 044723
2733 acres

Wind ROW Application Disposition
- Authorized
- Pending

Wind Resource Level
- High
- Medium
- Low

Transmission Line*
Voltage (kV)
- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

*Source: POWERmap, ©2003 Platts, a Division of the McGraw-Hill Companies.

** Data for lines < 100 kV is not available in many areas.

- City or Town
- Paved Road
- 4-WD Touring
- 4-WD Technical
- Motorcycle and ATV
- Non-BLM Lands
- Excluded Area (wilderness area, wilderness study area, national monument, or national conservation area)

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2 0 2 4 Miles

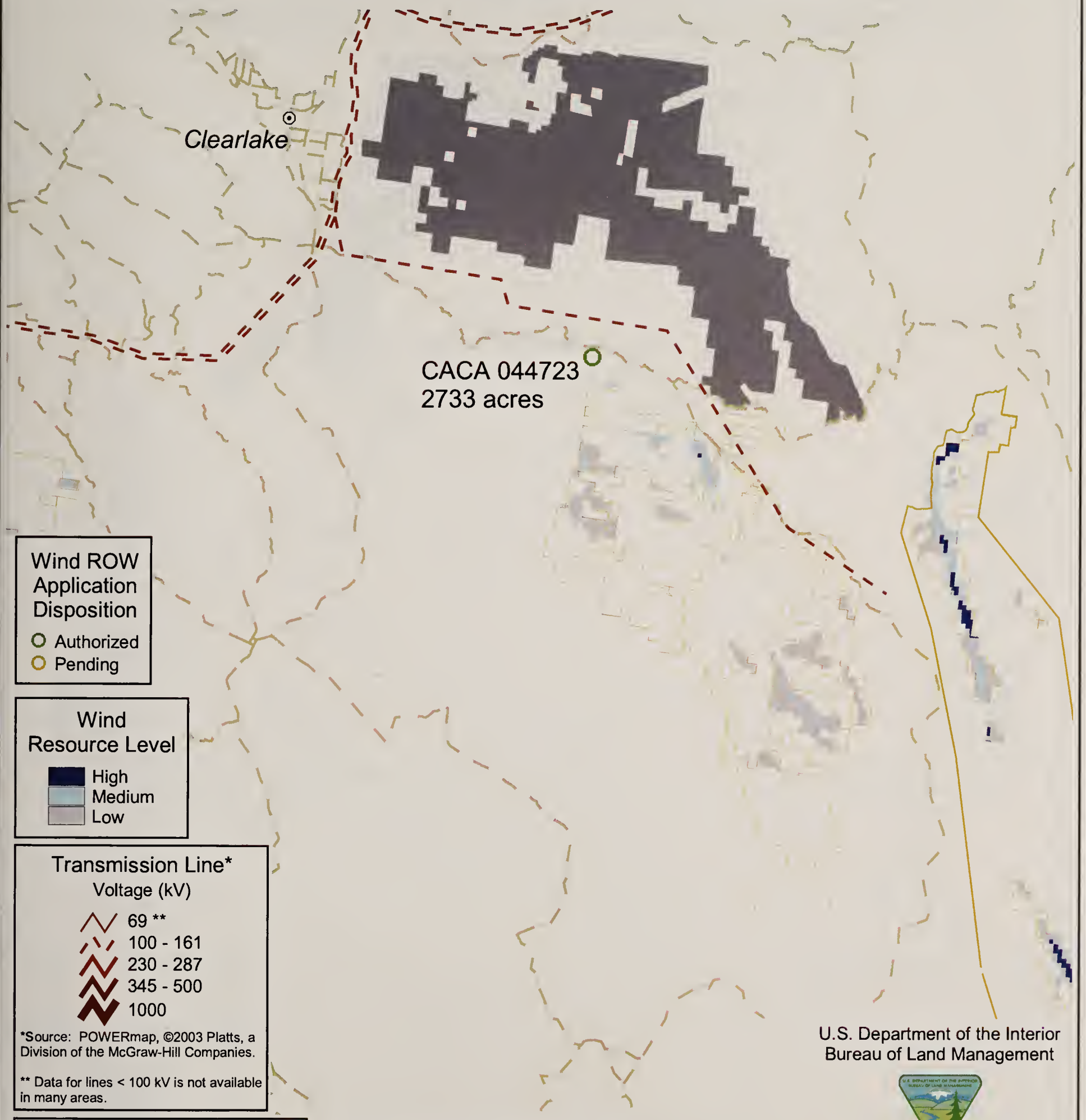
U.S. Department of the Interior
Bureau of Land Management

U.S. Department of Energy
National Renewable Energy Laboratory

NREL

08-APR-2005 10.1.6R

Wind Resource Potential
Knoxville Recreation Area, BLM Ukiah Field Office, CA



Wind ROW Application Disposition

- Authorized
- Pending

Wind Resource Level

- High
- Medium
- Low

Transmission Line*
Voltage (kV)

- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

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2 0 2 4 Miles

U.S. Department of the Interior
Bureau of Land Management

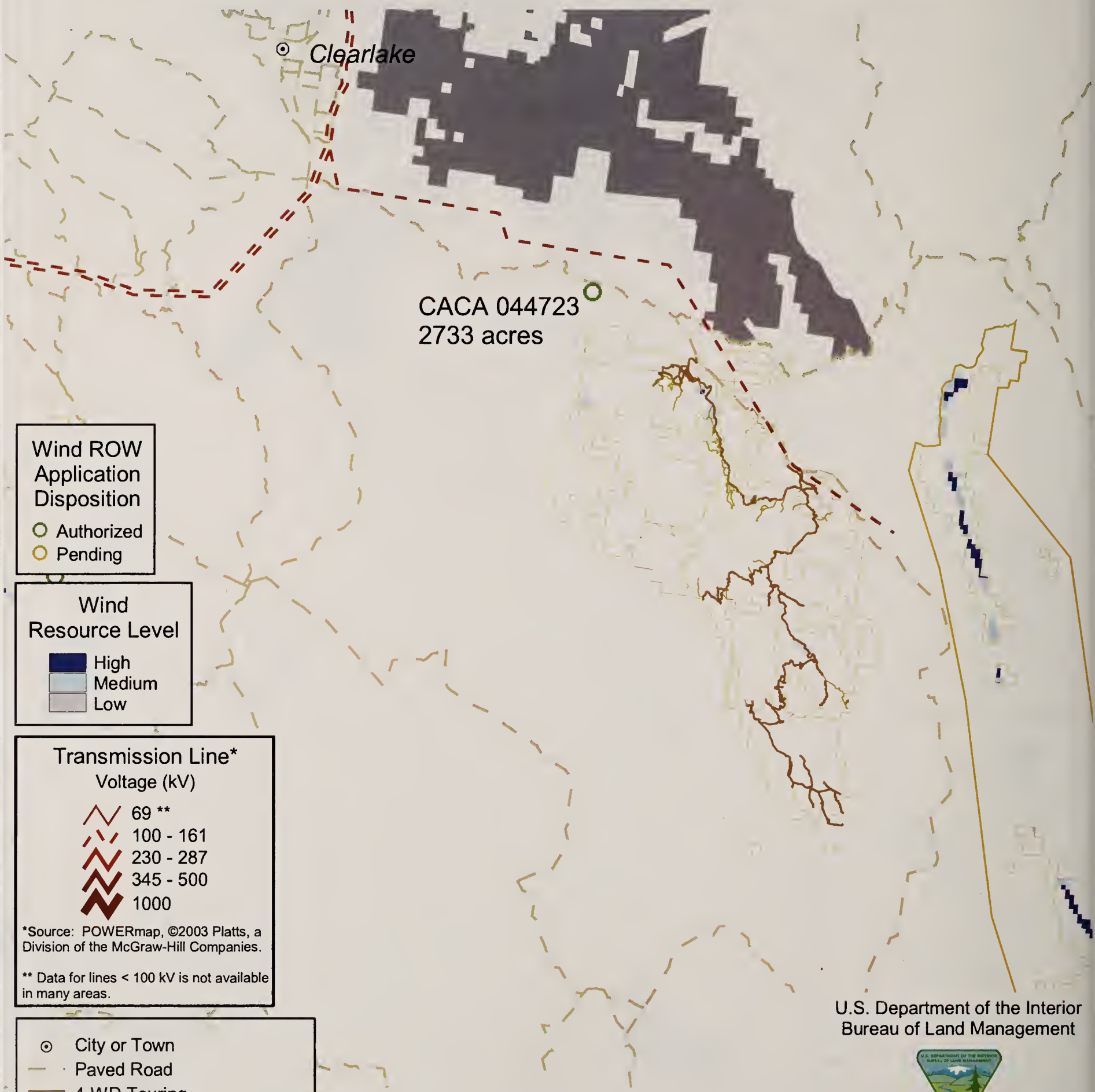
U.S. Department of Energy
National Renewable Energy Laboratory

NREL

07-APR-2005 10.1.6R

Wind Resource Potential
Knoxville Recreation Area, BLM Ukiah Field Office, CA

Wind power density of 350 watts per square meter or greater with maximum 15% slope using original modeled estimate



Wind ROW Application Disposition
- Authorized
- Pending

Wind Resource Level
- High
- Medium
- Low

Transmission Line*
Voltage (kV)
- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

*Source: POWERmap, ©2003 Platts, a Division of the McGraw-Hill Companies.

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- Paved Road
- 4-WD Touring
- 4-WD Technical
- Motorcycle and ATV
- Non-BLM Lands
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2 0 2 4 Miles

U.S. Department of the Interior
Bureau of Land Management

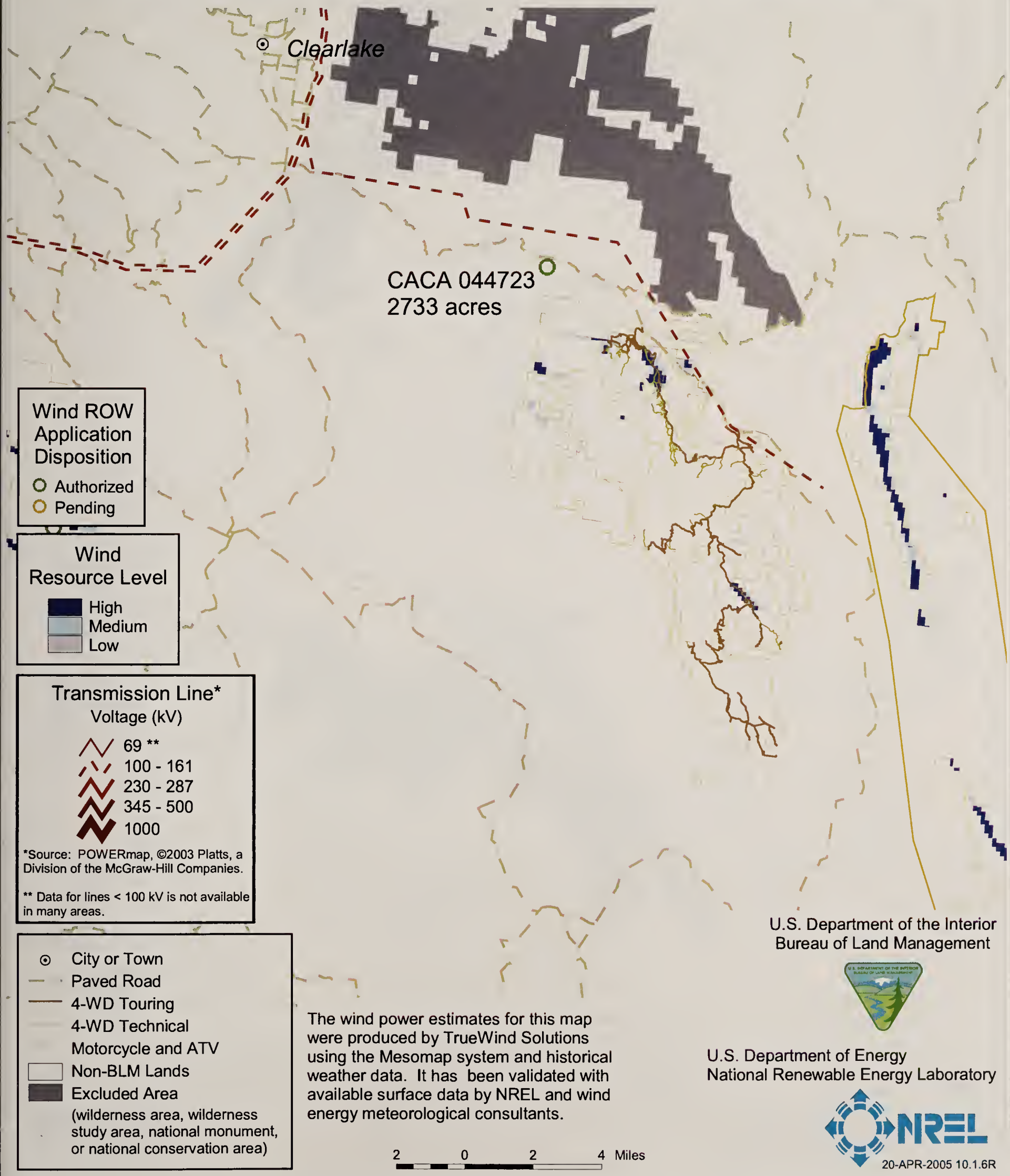
U.S. Department of Energy
National Renewable Energy Laboratory

NREL

20-APR-2005 10.1.6R

Wind Resource Potential
Knoxville Recreation Area, BLM Ukiah Field Office, CA

Wind power density of 350 watts per square meter or greater with maximum 15% slope using 120% of original modeled estimate



Wind ROW Application Disposition
- Authorized
- Pending

Wind Resource Level
- High
- Medium
- Low

Transmission Line*
Voltage (kV)
- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

*Source: POWERmap, ©2003 Platts, a Division of the McGraw-Hill Companies.

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- City or Town
- Paved Road
- 4-WD Touring
- 4-WD Technical
- Motorcycle and ATV
- Non-BLM Lands
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2 0 2 4 Miles

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Bureau of Land Management

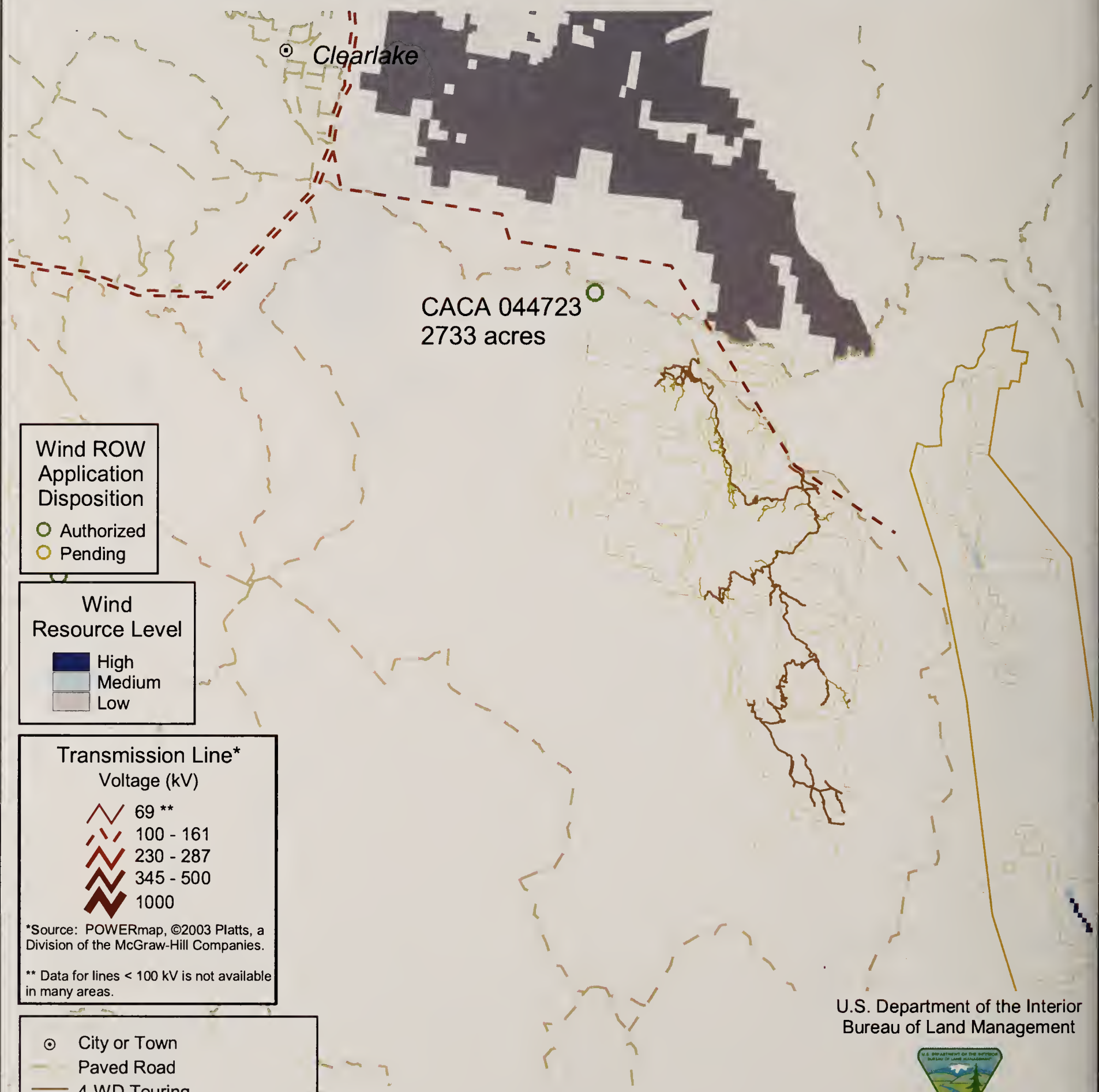
U.S. Department of Energy
National Renewable Energy Laboratory

NREL

20-APR-2005 10.1.6R

Wind Resource Potential
Knoxville Recreation Area, BLM Ukiah Field Office, CA

Wind power density of 350 watts per square meter or greater with maximum 15% slope using 80% of original modeled estimate



Wind ROW Application Disposition
- Authorized
- Pending

Wind Resource Level
- High
- Medium
- Low

Transmission Line*
Voltage (kV)
- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

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- Paved Road
- 4-WD Touring
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- Motorcycle and ATV
- Non-BLM Lands
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2 0 2 4 Miles

U.S. Department of the Interior
Bureau of Land Management

U.S. Department of Energy
National Renewable Energy Laboratory

NREL

20-APR-2005 10.1.6R

Wind Resource Potential
Indian Valley/Walker Ridge Area
BLM Ukiah Field Office, CA

CACA 044000
7865 acres

CACA 044723
2733 acres

Clearlake

Wind ROW Application Disposition
- Authorized
- Pending

Wind Resource Level
- High
- Medium
- Low

Transmission Line*
Voltage (kV)
- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

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2 0 2 4 Miles

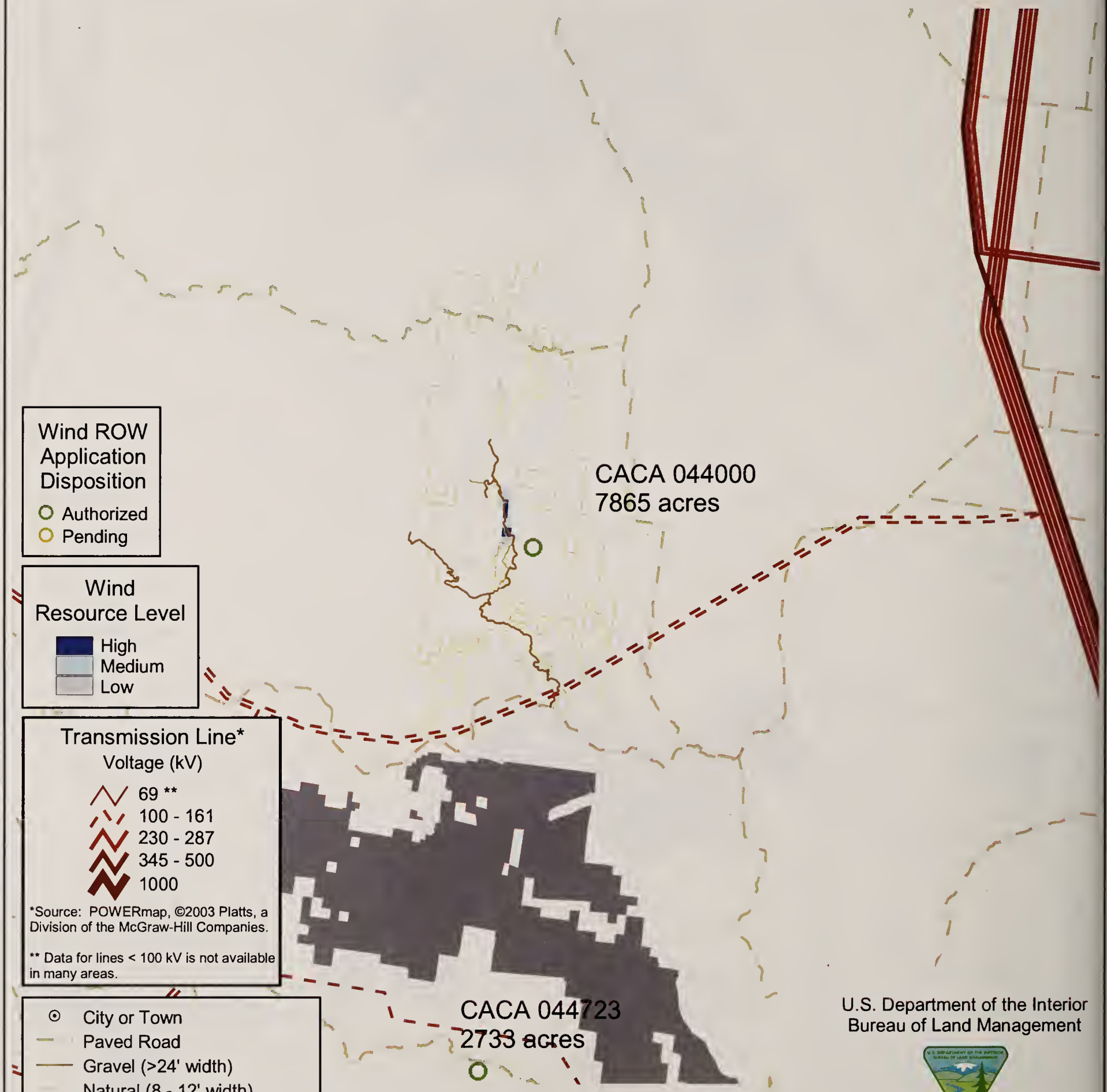
U.S. Department of the Interior
Bureau of Land Management

U.S. Department of Energy
National Renewable Energy Laboratory

NREL

07-APR-2005 10.1.6R

Wind Resource Potential
Indian Valley/Walker Ridge, BLM Ukiah Field Office, CA
Wind power density of 350 watts per square meter or greater with maximum 15% slope using original modeled estimate



Wind ROW Application Disposition
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- Pending

Wind Resource Level
- High
- Medium
- Low

Transmission Line*
Voltage (kV)
- 69 **
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- 230 - 287
- 345 - 500
- 1000

*Source: POWERmap, ©2003 Platts, a Division of the McGraw-Hill Companies.

** Data for lines < 100 kV is not available in many areas.

- City or Town
- Paved Road
- Gravel (>24' width)
- Natural (8 - 12' width)
- Natural (< 8' width)
- Census Road or Trail
- Non-BLM Lands
- Excluded Area (wilderness area, wilderness study area, national monument, or national conservation area)

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2 0 2 4 Miles

U.S. Department of the Interior
Bureau of Land Management

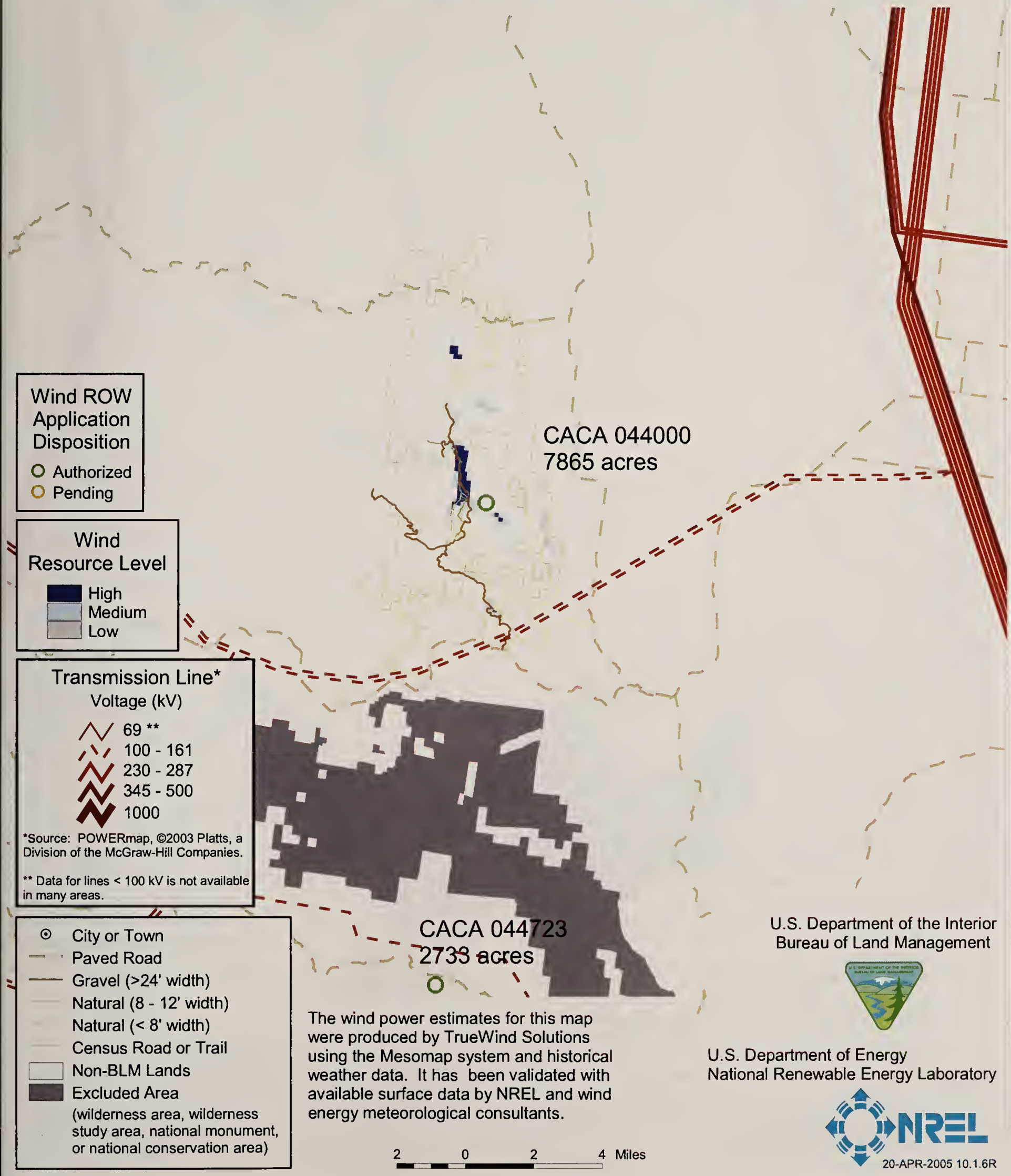
U.S. Department of Energy
National Renewable Energy Laboratory

NREL

20-APR-2005 10.1.6R

Wind Resource Potential
Indian Valley/Walker Ridge, BLM Ukiah Field Office, CA

Wind power density of 350 watts per square meter or greater with maximum 15% slope using 120% of original modeled estimate



Wind ROW Application Disposition
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Wind Resource Level
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Transmission Line*
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2 0 2 4 Miles

U.S. Department of the Interior
Bureau of Land Management

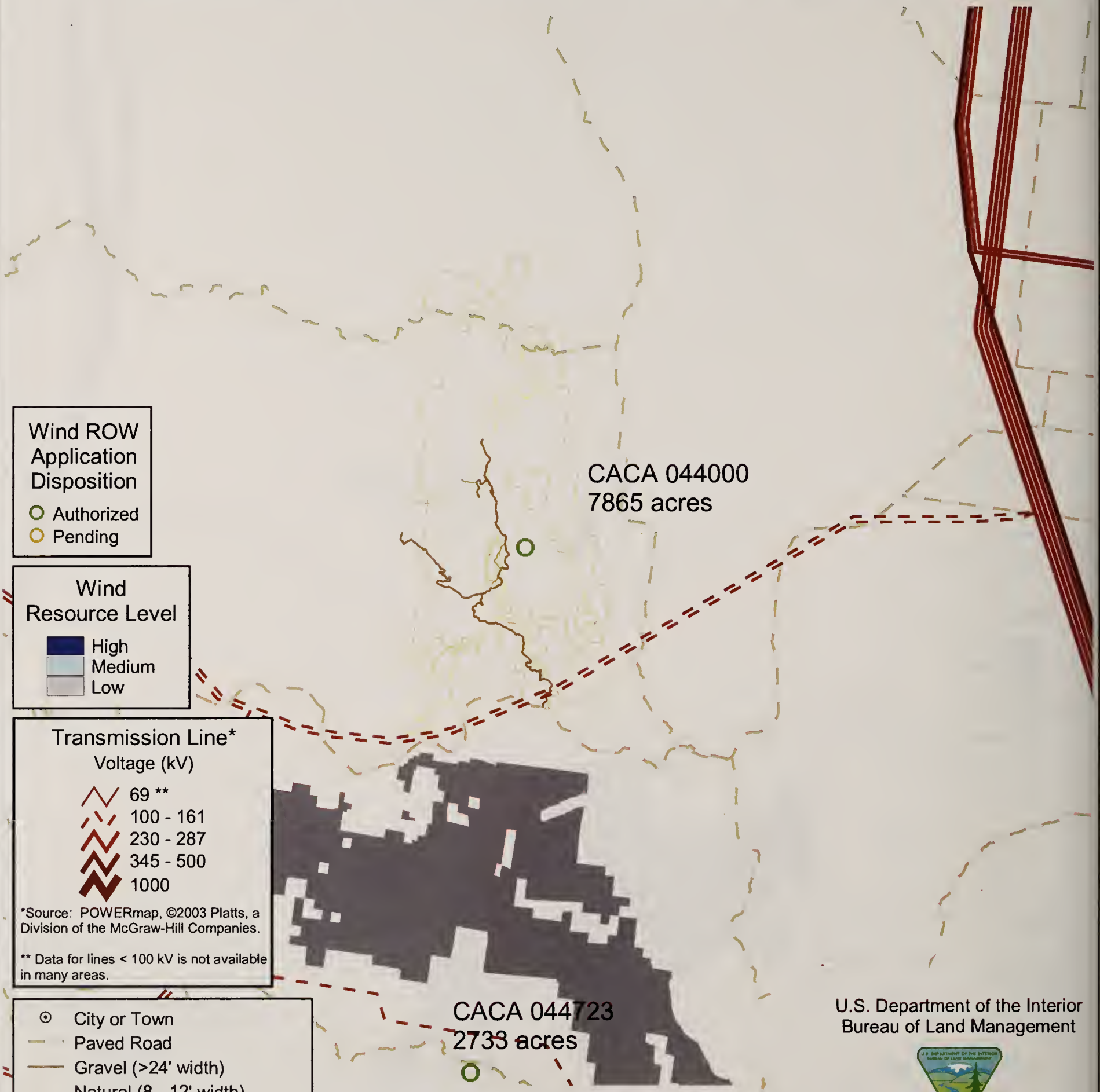
U.S. Department of Energy
National Renewable Energy Laboratory

NREL

20-APR-2005 10.1.6R

Wind Resource Potential
Indian Valley/Walker Ridge, BLM Ukiah Field Office, CA

Wind power density of 350 watts per square meter or greater with maximum 15% slope using 80% of original modeled estimate



Wind ROW Application Disposition
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Wind Resource Level
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- Medium
- Low

Transmission Line*
Voltage (kV)
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- Paved Road
- Gravel (>24' width)
- Natural (8 - 12' width)
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2 0 2 4 Miles

U.S. Department of the Interior
Bureau of Land Management

U.S. Department of Energy
National Renewable Energy Laboratory

NREL

20-APR-2005 10.1.6R

Wind Resource Potential
Berryessa Peak Area, BLM Ukiah Field Office, CA

Wind ROW Application Disposition
- Authorized
- Pending

Wind Resource Level
- High
- Medium
- Low

Transmission Line*
Voltage (kV)
- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

*Source: POWERmap, ©2003 Platts, a Division of the McGraw-Hill Companies.

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- City or Town
- Paved Road
- Census Road or Trail
- Non-BLM Lands
- Excluded Area (wilderness area, wilderness study area, national monument, or national conservation area)

The wind power estimates for this map were produced by TrueWind Solutions using the Mesomap system and historical weather data. It has been validated with available surface data by NREL and wind energy meteorological consultants.

2 0 2 4 Miles

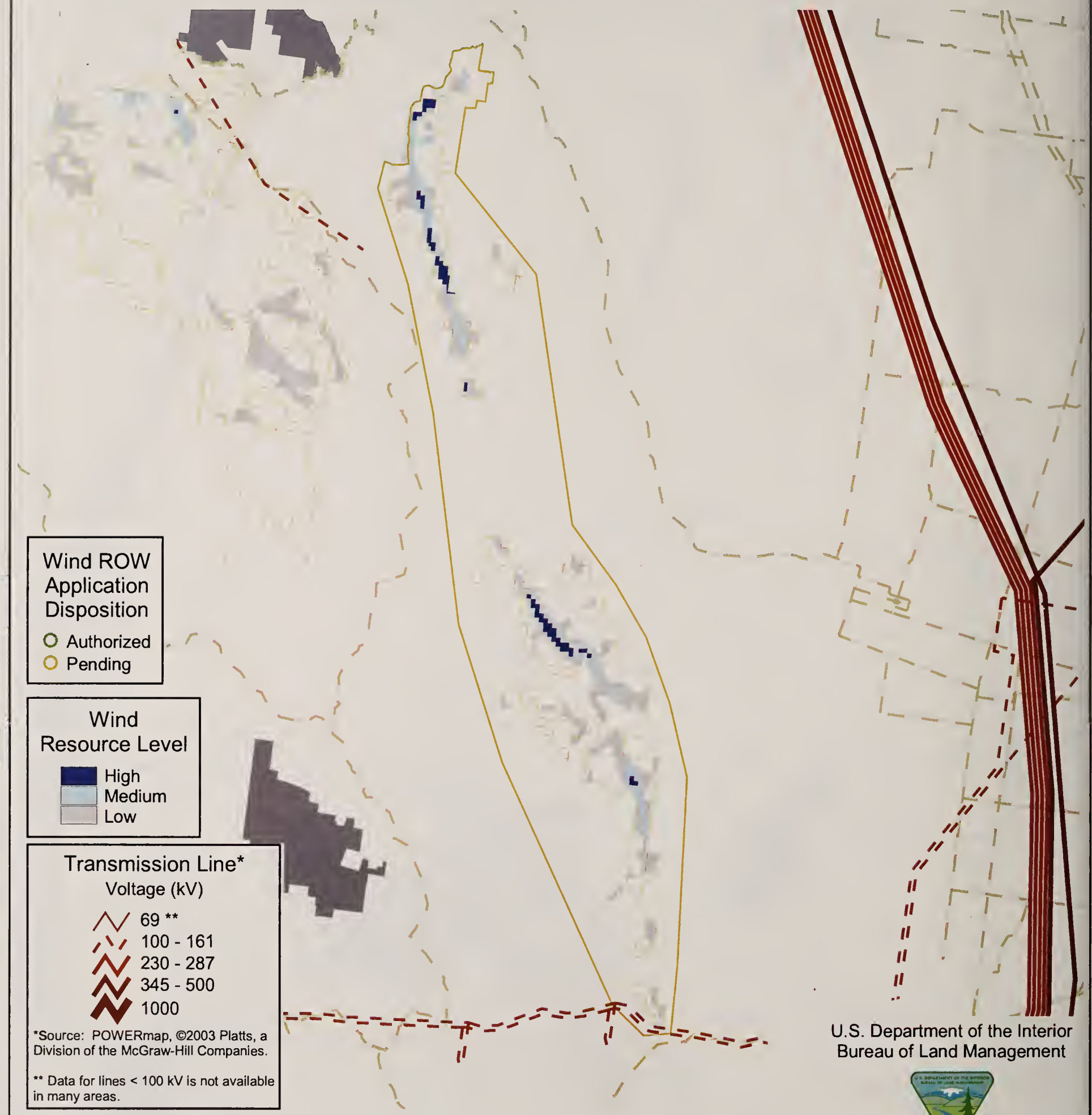
U.S. Department of the Interior
Bureau of Land Management

U.S. Department of Energy
National Renewable Energy Laboratory

NREL

17-APR-2005 10.1.6R

Wind Resource Potential
Berryessa Peak Area, BLM Ukiah Field Office, CA



Wind ROW Application Disposition
- Authorized
- Pending

Wind Resource Level
- High
- Medium
- Low

Transmission Line*
Voltage (kV)
- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

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** Data for lines < 100 kV is not available in many areas.

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- Paved Road
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2 0 2 4 Miles

U.S. Department of the Interior
Bureau of Land Management

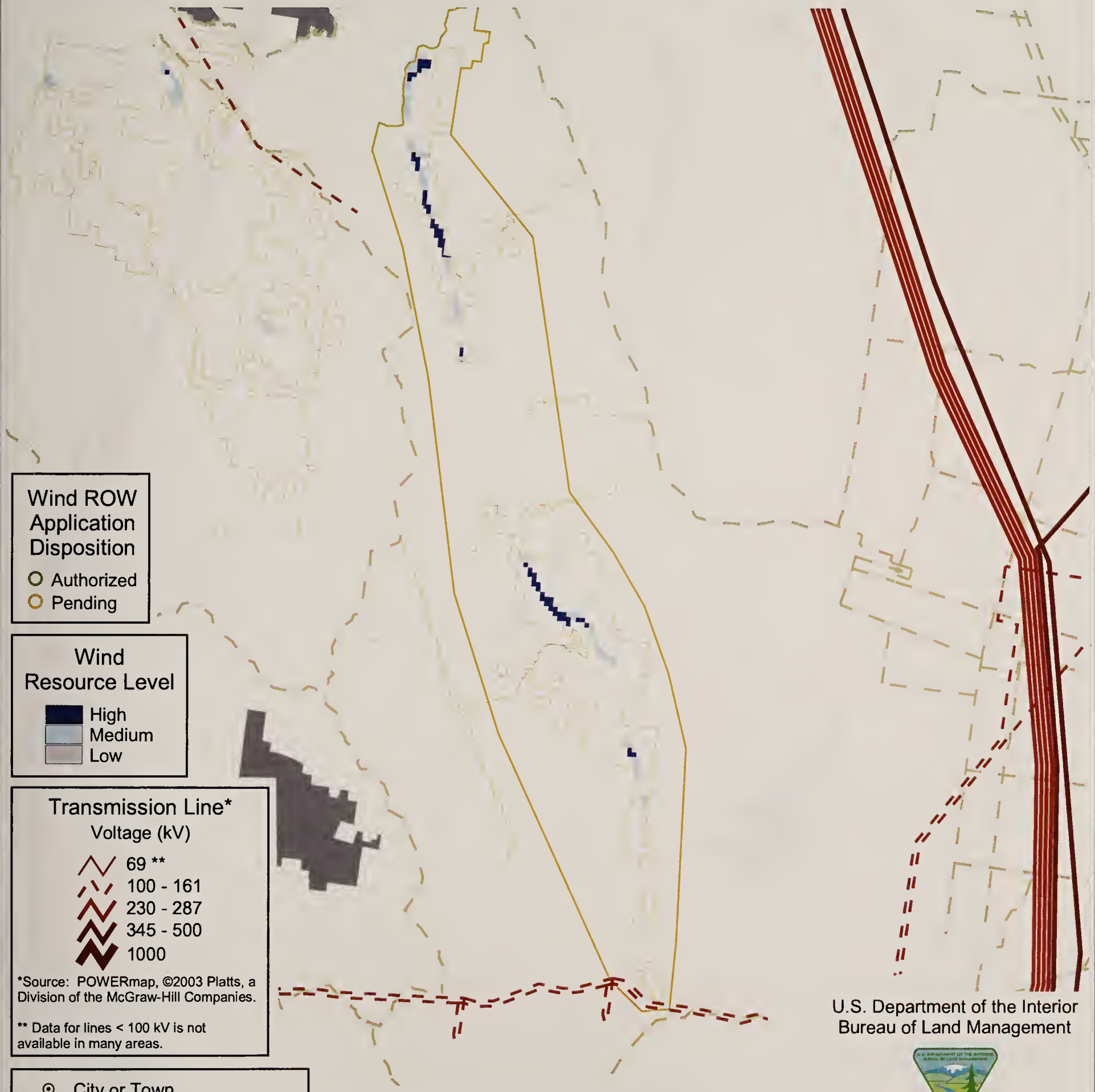
U.S. Department of Energy
National Renewable Energy Laboratory

NREL

07-APR-2005 10.1.6R

Wind Resource Potential
Berryessa Peak Area, BLM Ukiah Field Office, CA

Wind power density of 350 watts per square meter or greater with maximum 15% slope using original modeled estimate



Wind ROW Application Disposition
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Wind Resource Level
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- 345 - 500
- 1000

*Source: POWERmap, ©2003 Platts, a Division of the McGraw-Hill Companies.

** Data for lines < 100 kV is not available in many areas.

- City or Town
- Paved Road
- Census Road or Trail
- Non-BLM Lands
- Excluded Area (wilderness area, wilderness study area, national monument, or national conservation area)

The wind power estimates for this map were produced by TrueWind Solutions using the Mesomap system and historical weather data. It has been validated with available surface data by NREL and wind energy meteorological consultants.

2 0 2 4 Miles

U.S. Department of the Interior
Bureau of Land Management

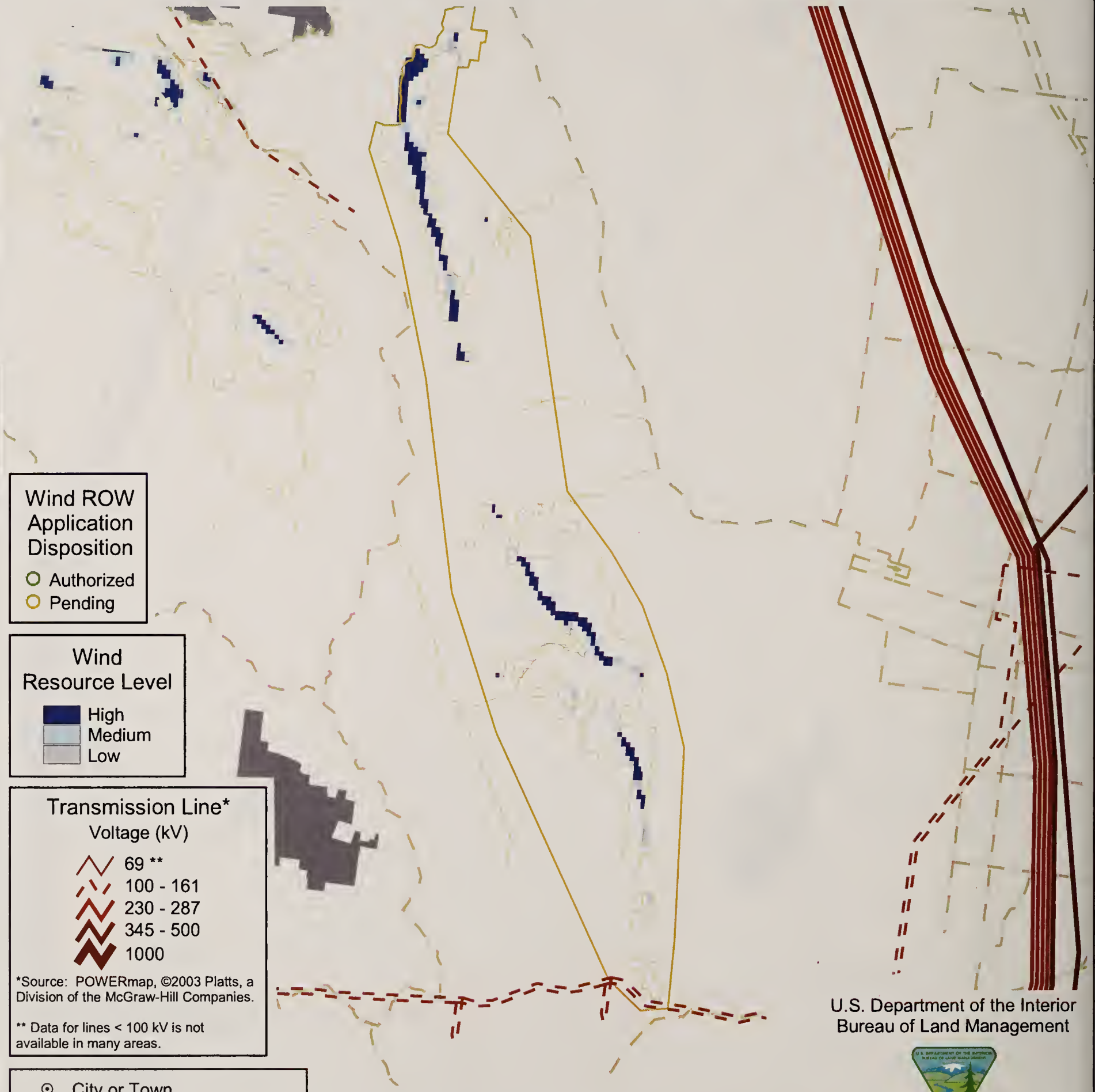
U.S. Department of Energy
National Renewable Energy Laboratory

NREL

20-APR-2005 10.1.6R

Wind Resource Potential
Berryessa Peak Area, BLM Ukiah Field Office, CA

Wind power density of 350 watts per square meter or greater with maximum 15% slope using 120% of original modeled estimate



Wind ROW Application Disposition

- Authorized
- Pending

Wind Resource Level

- High
- Medium
- Low

Transmission Line*
Voltage (kV)

- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

*Source: POWERmap, ©2003 Platts, a Division of the McGraw-Hill Companies.

** Data for lines < 100 kV is not available in many areas.

- City or Town
- Paved Road
- Census Road or Trail
- Non-BLM Lands
- Excluded Area (wilderness area, wilderness study area, national monument, or national conservation area)

The wind power estimates for this map were produced by TrueWind Solutions using the Mesomap system and historical weather data. It has been validated with available surface data by NREL and wind energy meteorological consultants.

2 0 2 4 Miles

U.S. Department of the Interior
Bureau of Land Management

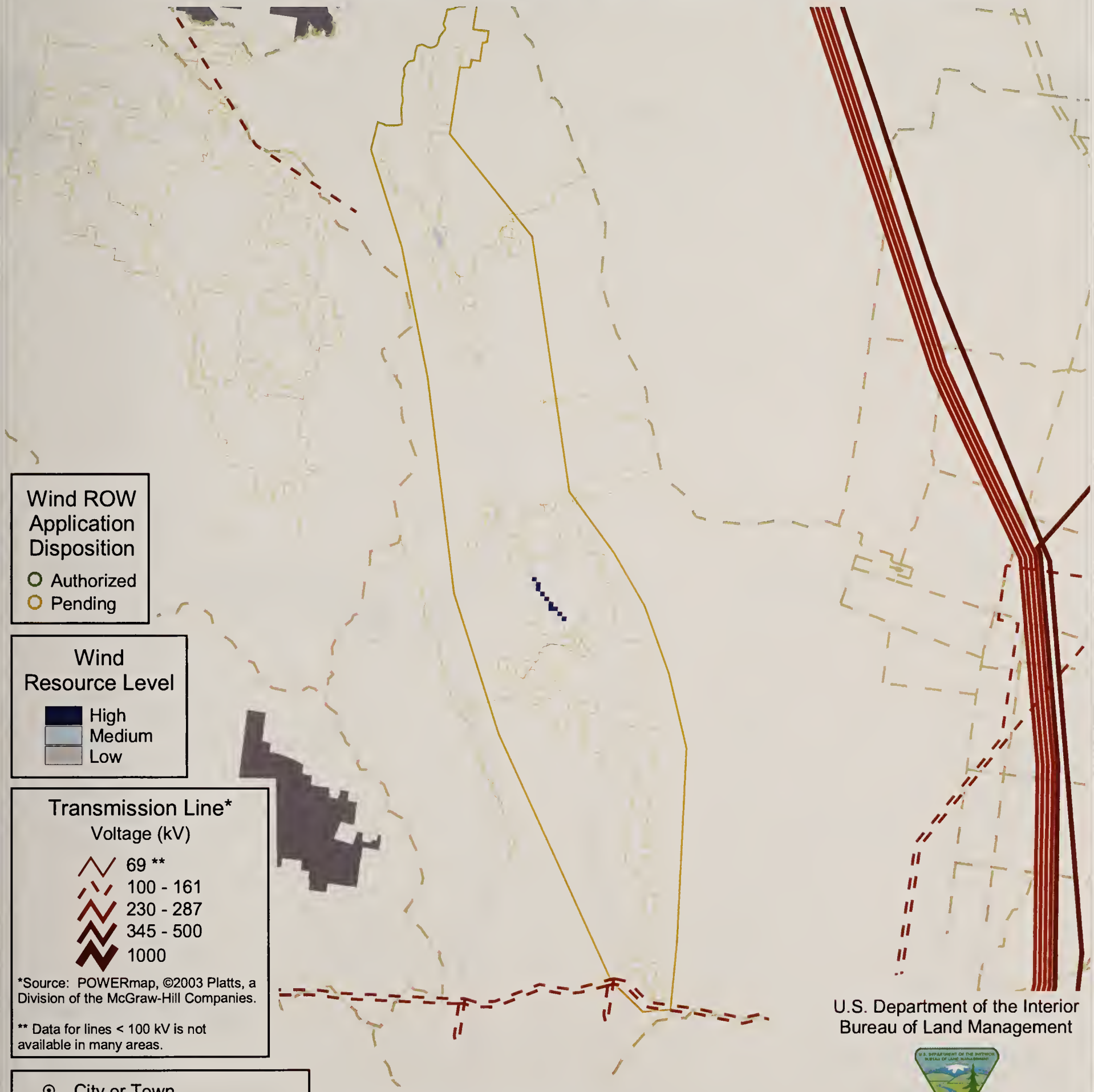
U.S. Department of Energy
National Renewable Energy Laboratory

NREL

20-APR-2005 10.1.6R

Wind Resource Potential
Berryessa Peak Area, BLM Ukiah Field Office, CA

Wind power density of 350 watts per square meter or greater with maximum 15% slope using 80% of original modeled estimate



Wind ROW Application Disposition
- Authorized
- Pending

Wind Resource Level
- High
- Medium
- Low

Transmission Line*
Voltage (kV)
- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

*Source: POWERmap, ©2003 Platts, a Division of the McGraw-Hill Companies.

** Data for lines < 100 kV is not available in many areas.

- City or Town
- Paved Road
- Census Road or Trail
- Non-BLM Lands
- Excluded Area (wilderness area, wilderness study area, national monument, or national conservation area)

The wind power estimates for this map were produced by TrueWind Solutions using the Mesomap system and historical weather data. It has been validated with available surface data by NREL and wind energy meteorological consultants.

2 0 2 4 Miles

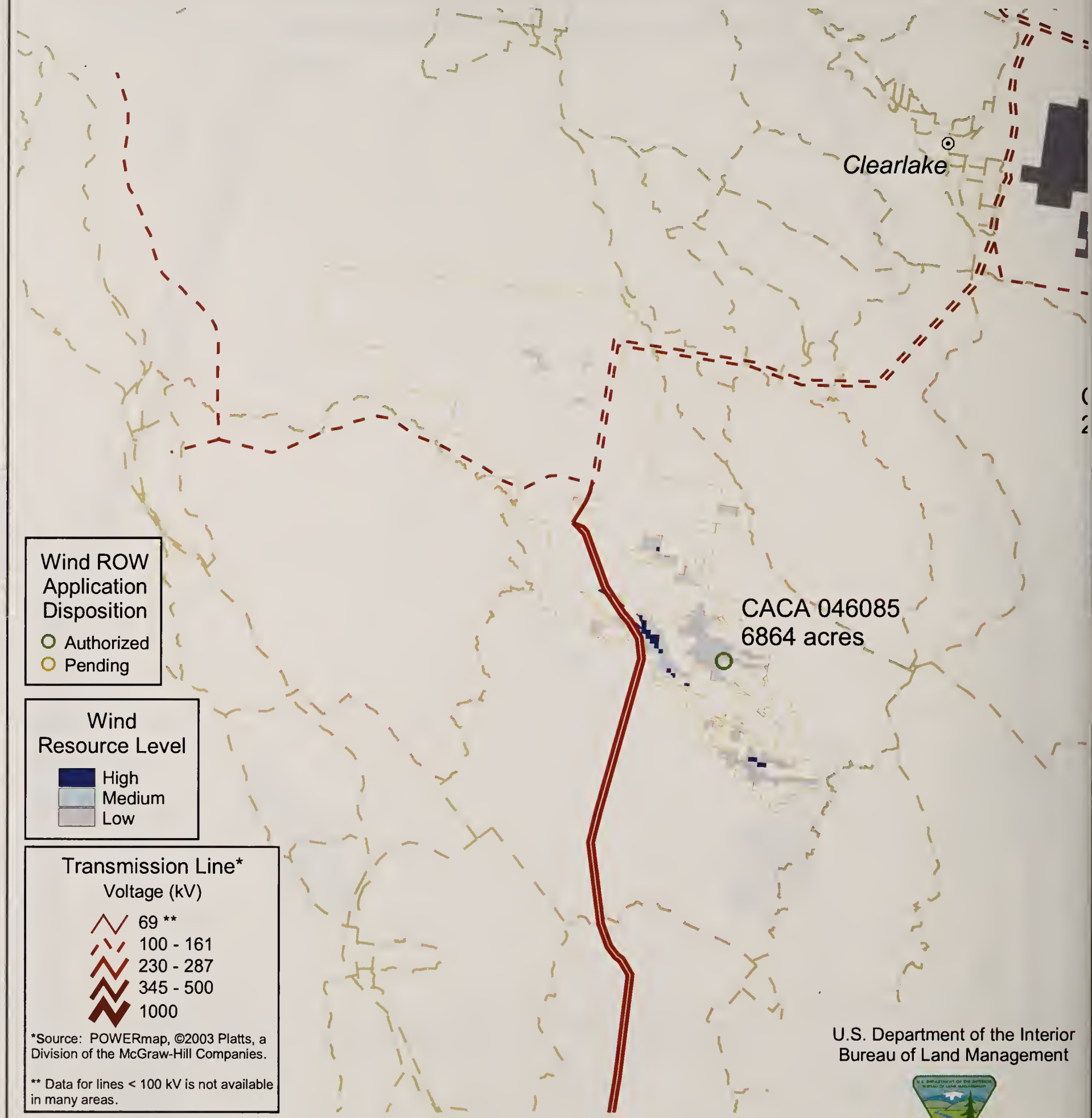
U.S. Department of the Interior
Bureau of Land Management

U.S. Department of Energy
National Renewable Energy Laboratory

NREL

20-APR-2005 10.1.6R

Wind Resource Potential
Geysers Geothermal Area, BLM Ukiah Field Office, CA



Wind ROW Application Disposition
- Authorized
- Pending

Wind Resource Level
- High
- Medium
- Low

Transmission Line*
Voltage (kV)
- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

*Source: POWERmap, ©2003 Platts, a Division of the McGraw-Hill Companies.

** Data for lines < 100 kV is not available in many areas.

- City or Town
- Paved Road
- Non-BLM Lands
- Excluded Area (wilderness area, wilderness study area, national monument, or national conservation area)

The wind power estimates for this map were produced by TrueWind Solutions using the Mesomap system and historical weather data. It has been validated with available surface data by NREL and wind energy meteorological consultants.

2 0 2 4 Miles

U.S. Department of the Interior
Bureau of Land Management

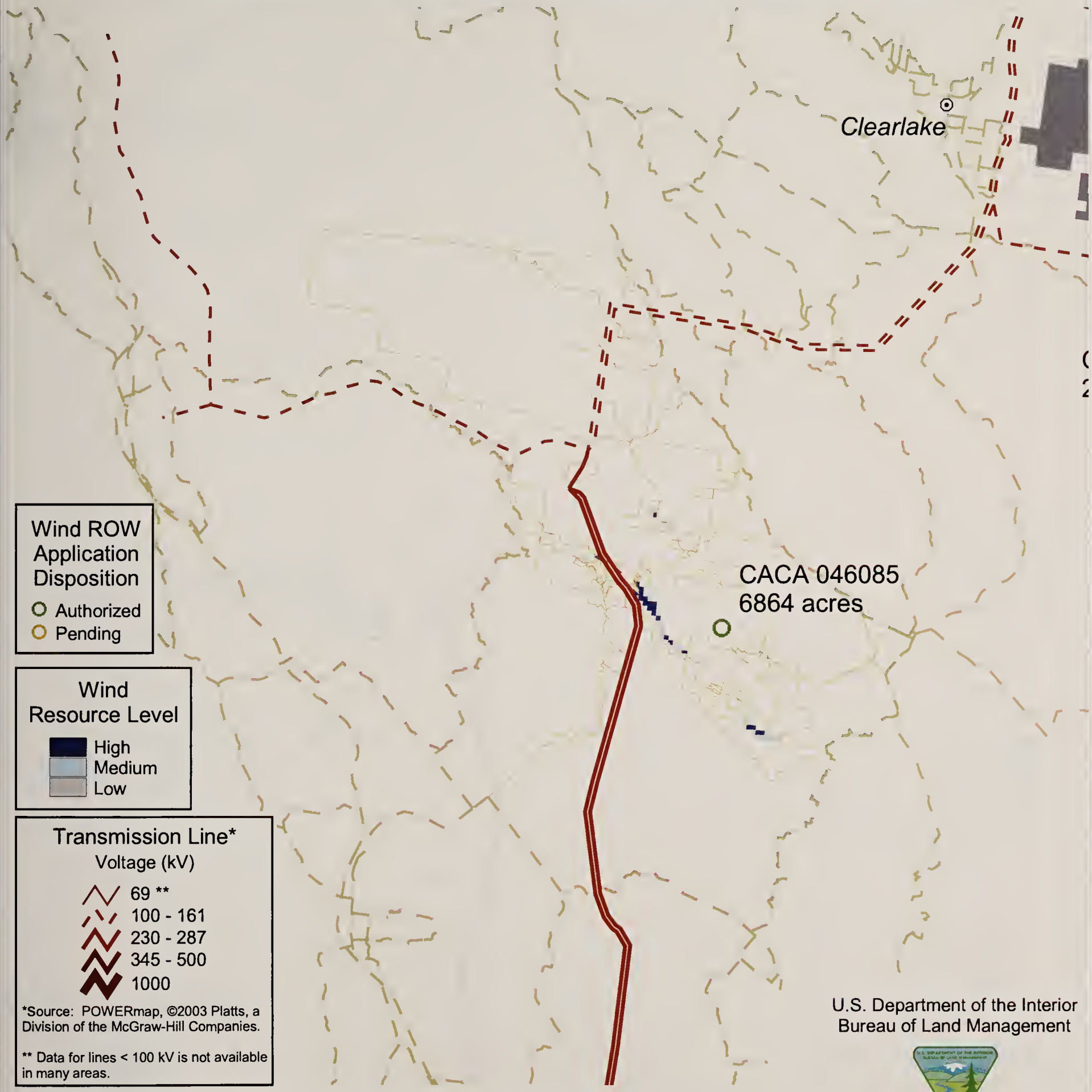
U.S. Department of Energy
National Renewable Energy Laboratory

NREL

07-APR-2005 10.1.6R

Wind Resource Potential
Geysers Geothermal Area, BLM Ukiah Field Office, CA

Wind power density of 350 watts per square meter or greater with maximum 15% slope using original modeled estimate



Wind ROW Application Disposition
- Authorized
- Pending

Wind Resource Level
- High
- Medium
- Low

Transmission Line*
Voltage (kV)
- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

*Source: POWERmap, ©2003 Platts, a Division of the McGraw-Hill Companies.

** Data for lines < 100 kV is not available in many areas.

- City or Town
- Paved Road
- Non-BLM Lands
- Excluded Area (wilderness area, wilderness study area, national monument, or national conservation area)

The wind power estimates for this map were produced by TrueWind Solutions using the Mesomap system and historical weather data. It has been validated with available surface data by NREL and wind energy meteorological consultants.

2 0 2 4 Miles

U.S. Department of the Interior
Bureau of Land Management

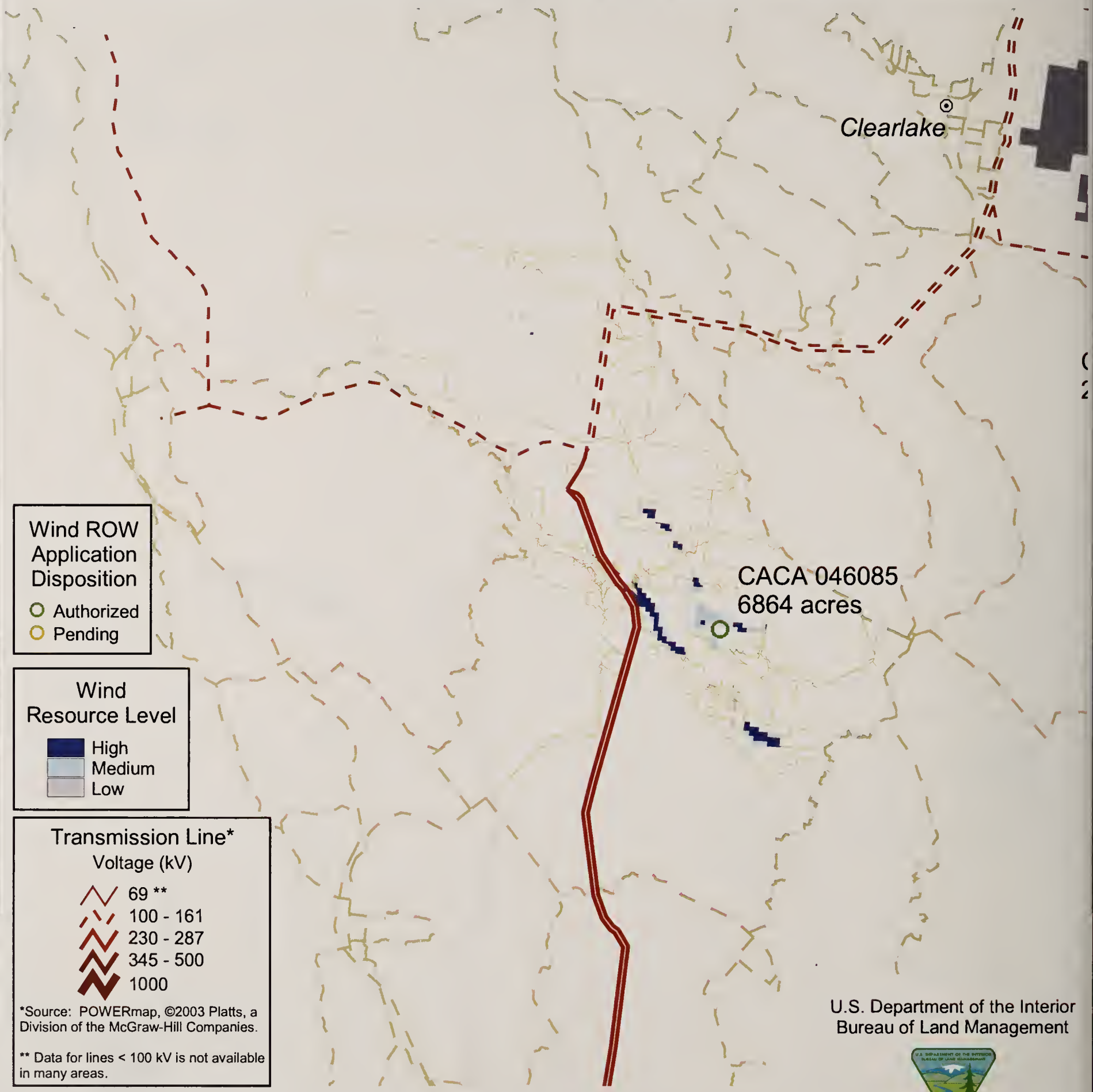
U.S. Department of Energy
National Renewable Energy Laboratory

NREL

20-APR-2005 10.1.6R

Wind Resource Potential
Geysers Geothermal Area, BLM Ukiah Field Office, CA

Wind power density of 350 watts per square meter or greater with maximum 15% slope using 120% of original modeled estimate



Wind ROW Application Disposition
- Authorized
- Pending

Wind Resource Level
- High
- Medium
- Low

Transmission Line*
Voltage (kV)
- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

*Source: POWERmap, ©2003 Platts, a Division of the McGraw-Hill Companies.

** Data for lines < 100 kV is not available in many areas.

- City or Town
- Paved Road
- Non-BLM Lands
- Excluded Area (wilderness area, wilderness study area, national monument, or national conservation area)

The wind power estimates for this map were produced by TrueWind Solutions using the Mesomap system and historical weather data. It has been validated with available surface data by NREL and wind energy meteorological consultants.

2 0 2 4 Miles

U.S. Department of the Interior
Bureau of Land Management

U.S. Department of Energy
National Renewable Energy Laboratory

NREL

20-APR-2005 10.1.6R

Wind Resource Potential
Geysers Geothermal Area, BLM Ukiah Field Office, CA

Wind power density of 350 watts per square meter or greater with maximum 15% slope using 80% of original modeled estimate

Clearlake

CACA 046085
6864 acres

Wind ROW Application Disposition
- Authorized
- Pending

Wind Resource Level
- High
- Medium
- Low

Transmission Line*
Voltage (kV)
- 69 **
- 100 - 161
- 230 - 287
- 345 - 500
- 1000

*Source: POWERmap, ©2003 Platts, a Division of the McGraw-Hill Companies.

** Data for lines < 100 kV is not available in many areas.

- City or Town
- Paved Road
- Non-BLM Lands
- Excluded Area (wilderness area, wilderness study area, national monument, or national conservation area)

The wind power estimates for this map were produced by TrueWind Solutions using the Mesomap system and historical weather data. It has been validated with available surface data by NREL and wind energy meteorological consultants.

2 0 2 4 Miles

U.S. Department of the Interior
Bureau of Land Management

U.S. Department of Energy
National Renewable Energy Laboratory

NREL

20-APR-2005 10.1.6R

APPENDIX L

RECOMMENDED OFF-HIGHWAY-VEHICLE MANAGEMENT GUIDLINES

APPENDIX L

L.1 RECOMMENDED OFF-HIGHWAY-VEHICLE MANAGEMENT GUIDLINES

Bureau of Land Management
Northwest California Resource Advisory Council
Recommended Off-Highway-Vehicle Management Guidelines

Adopted and Forwarded to the Bureau of Land Management
at a Regularly Scheduled Business Meeting
Aug. 2, 2001
Redding, California

The guidelines for Off-Highway-Vehicle management are the methods and practices determined to be appropriate to ensure that BLM Land Health Standards can be met, or that significant progress can be made toward meeting the standards. The guidelines were designated to provide direction, yet offer flexibility, for implementation through OHV designations, activity plans and permit terms and conditions.

Guideline 1: OHV use will not be allowed on streamsbanks, riparian/wetland areas. Where needed, crossings will be bridged or hardened.

Guideline 2: OHV use will not impair proper ecological function.

Guideline 3: OHV use requires review/action during/after periods of high use and or stress (fire, flood, drought). OHV closure may be appropriate in response to factors such as accelerated erosion or loss of natural barriers to off-road use.

Guideline 4: Plans for OHV use must consider other resources and uses (livestock grazing, other types of recreation, archaeological sites, wildlife, mineral resources extraction, timber management etc.) and be coordinated with other users of public lands. Management of OHV Use should be sensitive to the creation and management of areas for quiet activities.

Guideline 5: OHV use will be managed to provide for the maintenance and reproduction of desired plant species and the achievement of the potential natural vegetation or desired plant communities.

Guideline 6: OHV special events will require permits that will include site specific, measurable terms and conditions.

Guideline 7: OHV projects that are subject to California OHV grant funding shall comply with that program's requirements as well as Land Health Standards. Tread Lightly concepts and non-proliferation principles will be included in permits.

Guideline 8: OHV use must consider habitat requirements for fish and wildlife

Guideline 9: OHV management practices must consider soil erodiblity. Route designation and OHV management will be based on erosion hazard ratings.

Guideline 10: The spread of noxious weeds by OHV use will be combated through public education efforts, and vehicle cleaning requirements, or other measures, where appropriate.

Guideline 11: Locate routes, trails and developments away from sensitive areas.

Guideline 12: OHV related activities will be managed to protect and maintain watersheds, water quality and erosion control measures..

Guideline 13: Use various communication and interpretive measures and user groups to inform public land visitors about an ethic of public land use.

Guideline 14: OHV utilization and impacts will be monitored using currently accepted practices and techniques.

Guideline 15: "Open" OHV use areas must be specifically designated.

APPENDIX M

RECREATION OPPORTUNITIES SPECTRUM (ROS) FORMS

APPENDIX M

M.1 RECREATION OPPORTUNITIES SPECTRUM (ROS) FORMS

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North Cow SRMA - (Zone 4)
Middle Country

Management Objectives	By the year 2010, manage this zone to improve and maintain recreational opportunities and facilities that support the back country experience, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Wildlife Viewing - Hiking - Nature Study - Hunting - Mtn. biking - Shooting - Equestrian - Pleasure Driving	- Enjoy Nature - Short or long distance recreational opportunities - Education - Enjoy access to diverse Back Country - Enjoy viewshed	- Personal Exercise, skills in natural areas, improved outdoor knowledge, stress reduction - Environmental increased stewardship and protection of natural resources, greater protection of natural resources

Setting Prescriptions

Physical	Social	Administrative
Valued open space surrounded by developed and populated rural areas	Fewer than 12 people per group and 29 encounters per day	Identify on area brochure and map with signs and direction Identify as a non-motorized area Periodic LE presence Collaborate with County tourism entities Personal contacts Continue dispersal of area map Continue information of website

Management and Marketing Actions	
Management Actions: Roads and Trails Assess needs of all acquired roads/trails Installation of kiosks Rehabilitate non-designated roads and trails that area closed Continue facility maintenance (campgrounds, restrooms, etc.) Maintain signs and trail marking system Implement development and re-development of trailheads, rifle range and campgrounds (Willow Creek, Rifle Range, Mayacmas Campground, replace bathrooms, etc) Explore acquisition or easement opportunities to maintain access from Scotts Valley Road Close dead end trails that lead to private property encouraging trespass	**Marketing Actions:** Develop an interpretive plan Identify on the area brochure/map Collaborate with County tourism entities Promote volunteer efforts Personal contacts Continue dispersal of area map Continue information of website

Administrative and Monitoring Actions	
Administrative Actions: All motorized use is limited to administrative access only Assess trail brushing and maintenance needs Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Evaluate Special Recreation Use permit opportunities Assess permits for area beyond the gate for vehicle use during hunting season	Visual Resources Management Class III Partnerships Adjacent private landowners Mendocino County Parks and Recreation Dept. Mendocino County Sheriff's Dept. Lake County Sheriff's Dept. Westlake Resource Conservation District

No fees charged for general use Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with BLM and California Dept. of Fish and Game regulations Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire restrictions	Mendocino Resource Conservation District Native American Tribes Local Native Plant Society Backcountry Horsemen's Association Public Land Sportsmen Association California Dept. of Forestry and Fire Protection **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

North Cow SRMA - (Zone 3)
Back Country

Management Objectives	By the year 2010, manage this zone to preserve and improve resource values that provide for the back country recreation experience, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Wildlife Viewing - Hiking - Nature Study - Hunting - Mtn. biking - Shooting - Equestrian	- Enjoy Nature - Short or long distance recreational opportunities - Education - Enjoy access to diverse Back Country - Enjoy viewshed	- Personal Exercise, skills in natural areas, improved outdoor knowledge, stress reduction - Environmental increased stewardship and protection of natural resources, greater protection of natural resources

Setting Prescriptions

Physical	Social	Administrative
Valued open space that is easily accessible	Fewer than 6 people per group and 6 encounters per day	Identify on area brochure and map with signs and direction Identify as a non-motorized area Periodic LE presence Collaborate with County tourism entities Personal contacts Continue dispersal of area map Continue information of website

Management and Marketing Actions

Management Actions:

Roads and Trails

Assess needs of all acquired roads/trails
Rehabilitate non-designated roads and trails that area closed
Maintain signs and trail marking system
Close dead end trails that lead to private property encouraging trespass
Explore inholding acquisition opportunities

Marketing Actions:

Develop an interpretive plan
Identify on the area brochure/map
Collaborate with County tourism entities
Promote volunteer efforts
Personal contacts
Continue dispersal of area map
Continue information of website

Administrative and Monitoring Actions

Administrative Actions:

All motorized use is limited to administrative access only
Assess trail brushing and maintenance needs
Encourage use away from sensitive cultural & natural resources
Not open to wood cutting
Not open to target shooting and/or paint ball
Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested
Evaluate Special Recreation Use permit opportunities
No fees charged for general use
Equestrian Use limited to designated trails
Dogs must be on leash or controlled by voice command
Hunting allowed in conformance with BLM and California Dept. of Fish and Game regulations
Camping is limited to no more than 14 days per year and 14 days consecutively
Campfires must be in compliance with State of California Fire restrictions

Visual Resources Management

Class IV

Partnerships

Adjacent private landowners
Mendocino County Parks and Recreation Dept.
Mendocino County Sheriff's Dept.
Lake County Sheriff's Dept.
Blue Lakes Lodge
Westlake Resource Conservation District
Mendocino Resource Conservation District
Native American Tribes
Local Native Plant Society
Backcountry Horsemen's Association
Public Land Sportsmen Association
California Dept. of Forestry and Fire Protection

	Monitoring Actions: Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

North Cow SRMA - (Zone 2
Font Country

Management Objectives	By the year 2010, manage this zone to improve and maintain recreational opportunities and facilities that support the back country experience, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Wildlife Viewing - Hiking - Nature Study - Hunting - Mtn. biking - Shooting - Equestrain - Pleasure Driving	- Enjoy Nature - Short or long distance recreational opportunities - Education - Enjoy access to diverse Back Country - Enjoy viewshed	- Personal Exercise, skills in natural areas, improved outdoor knowledge, stress reduction - Environmental increased stewardship and protection of natural resources, greater protection of natural resources - Interpretive/Educational Outreach

Setting Prescriptions

Physical	Social	Administrative
Valued open space surrounded by developed and populated rural areas	Fewer than 25 people per group and 30 encounters per day	Identify on area brochure and map with signs and direction Identify as a non-motorized area Periodic LE presence Collaborate with County tourism entities Personal contacts Continue dispersal of area map Continue information of website

Management and Marketing Actions

Management Actions:

Roads and Trails

Assess needs of all acquired roads/trails
Installation of kiosks
Rehabilitate non-designated roads and trails that area closed
Continue facility maintenance (campgrounds, restrooms, etc.)
Maintain signs and trail marking system
Implement development and re-development of trailheads, rifle range and campgrounds (Willow Creek, Rifle Range, Mayacmas Campground, Glen Eden, etc)
Explore acquisition or easement opportunities to maintain access from Scotts Valley Road
Close dead end trails that lead to private property encouraging trespass
Explore access opportunities from Sulphur Springs/Vichy Springs

Marketing Actions:

Develop an interpretive plan
Identify on the area brochure/map
Collaborate with County tourism entities
Promote volunteer efforts
Personal contacts
Continue dispersal of area map
Continue information of website

Administrative and Monitoring Actions

Administrative Actions:

Vehicular access is limited to street legal vehicles on the Mendo-Rock Road, beyond the CDF water tank 3.3 miles, and spur trails to the recreation sites (except during the general deer hunting season)
All other motorized use is limited to administrative access only
Assess trail brushing and maintenance needs
Encourage use away from sensitive cultural & natural resources
Not open to wood cutting
Open to target shooting and/or paint ball

Visual Resources Management

Class IV

Partnerships

Adjacent private landowners
Mendocino County Parks and Recreation Dept.
Mendocino County Sheriff's Dept.
Lake County Sheriff's Dept.

Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Evaluate Special Recreation Use permit opportunities Assess permits for area beyond the gate for vehicle use during hunting season No fees charged for general use Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with BLM and California Dept. of Fish and Game regulations Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire restrictions	Blue Lakes Lodge Westlake Resource Conservation District Mendocino Resource Conservation District Native American Tribes Local Native Plant Society Backcountry Horsemen's Association Public Land Sportsmen Association California Dept. of Forestry and Fire Protection Vichy Springs Resort **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

North Cow SRMA - (Zone)
Rural

Management Objectives	By the year 2010, manage this zone to improve recreational opportunities, create an additional access point and expand partnerships, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Wildlife Viewing - Hiking - Nature Study - Mtn. biking	- Enjoy Nature - Short or long distance recreational opportunities - Education - Enjoy access to diverse Back Country - Impressive viewshed - Enjoy Access to Blue Lakes	- Personal Exercise, skills in natural areas, improved outdoor knowledge - Environmental increased stewardship and protection of natural resources, greater protection of natural resources

Setting Prescriptions

Physical	Social	Administrative
Rural setting on the perimeter with access to back and middle country	Fewer than 50 people per group and 30 encounters per day	Identify on area brochure and map with signs and direction Identify as a non-motorized area Periodic LE presence

Management and Marketing Actions

Management Actions:

Roads and Trails

Assess needs of all acquired roads/trails
Develop access points (trailheads, parking, restrooms, etc.)
Develop trails
Installation of kiosks
Rehabilitate non-designated roads and trails that area closed
Explore acquisition or easement opportunities to accommodate and develop access from Highway 20

Marketing Actions:

Develop an interpretive plan
Identify on the area brochure/map
Collaborate with County tourism entities
Personal contacts
Continue dispersal of area map
Continue information of website

Administrative and Monitoring Actions

Administrative Actions:

All motorized use is limited to administrative access only
Assess trail brushing and maintenance needs
Encourage use away from sensitive cultural & natural resources
Not open to wood cutting
Not open to target shooting and/or paint ball
Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested
Evaluate Special Recreation Use permit opportunities
No fees charged for general use
Equestrian Use limited to designated trails
Dogs must be on leash

Visual Resources Management

Class IV

Partnerships

Adjacent private landowners
Blue Lakes Lodge
Local Native Plant Society
Backcountry Horsemen's Association
Public Land Sportsmen Association
Mendocino Resource Conservation District
Native American Tribes
California Dept. of Forestry and Fire Protection

Monitoring Actions:

Assure objectives are being met and setting prescriptions are being maintained
Monitor implemented actions and evaluate

South Cow SRMA - (Zone 2
Middle Country

Management Objectives	By the year 2010, manage this zone to maintain and improve middle country recreational opportunities for visitors to engage in primarily casual use but open for a maximum of 4 events (SRP's) that require the closure of the entire SRMA, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Motorcycle (single tracks & loops) - ATV Touring - 4x4 Touring - Camping - Hunting - Hiking/Mtn Biking (occasional)	- Enjoy Nature - Solitude - Education - Enjoy access to diverse Back Country - Enjoy easy access to trail system from campground -Intermediate and advanced riding skills necessary	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, risk - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns

Setting Prescriptions

Physical	Social	Administrative
Middle country bordering 3 zones of front country and 1 zone of unique natural resources	Fewer than 13 people per group and 15-29 encounters per day	Provide map that identifies infrastructure (trails, campgrounds, etc) Routine LE Presence Routes designated (trails, barriers, signs, etc)

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails All motorized use is limited to designated roads and trails Modify roads and trails as needed to mitigate impacts	Personal contacts Continue dispersal of area map Continue information of website

Rehabilitate non-designated roads and trails that area closed Continue facility maintenance (campgrounds, restrooms, etc.) Maintain signs and trail marking system Implement development and re-development of staging areas and campgrounds (Westside Staging, Eastside, Oakwood Springs, replace bathrooms, etc) Explore acquisition opportunities to accommodate and develop access from Highway 175 Explore inholding acquisition opportunities Close dead end trails that lead to private property encouraging trespass Annual evaluation of bridge structures (capacity and structural integrity	Update information at the kiosks in the staging and campground areas
Administrative and Monitoring Actions	
Administrative Actions: All motorized use is limited to designated and maintained dirt roads and trails Concentrated motorcycle use on loop trails Assess wet weather closure conditions Assess trail brushing and maintenance needs Consider dead end trails for other recreational opportunities (i.e. camping, hunting) Eight Mile Valley research, restoration, and conservation project area Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Open for Equestrian use Dogs must be on leash or controlled by voice command Hunting allowed in conformance with BLM and California Depart. of Fish and Game regulations Camping is limited to no more than 14 days per year and 14 days consecutively	<u>Visual Resources Management</u> Class III <u>Partnerships</u> Mendocino 4x4 Club Santa Rosa 4x4 Club Los Altos Dirt Bikers Ridge Raiders (4x4 club) Sonoma County Sports Cycle Association Wine Country Rock Crawlers Mendocino County Sheriff's Department Lake County Sheriff's Department Westlake Resource Conservation District Local Native Plant Society Mendocino Resource Conservation District Native American Tribes UC Hopland Field State Scotts Creek CRMP California Dept of Forestry and Fire Protection **Monitoring Actions:**

Campfires must be in compliance with State of California Fire Restrictions	Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

South Cow SRMA - (Zone 2
Font Country

Management Objectives	By the year 2010, manage this zone to maintain and improve front country recreational opportunities for visitors to engage in primarily casual use but open for a maximum of 4 events (SRP's) that require the closure of the entire SRMA, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Motorcycle (single tracks & loops) - ATV Touring - 4x4 Touring - Camping - Hunting - Hiking/Mtn Biking (occasional)	- Enjoy Nature - Solitude - Education - Enjoy access to diverse Back Country - Enjoy easy access to trail system from campground -Intermediate and advanced riding skills necessary	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, risk - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns

Setting Prescriptions

Physical	Social	Administrative
Front country surrounding 3 islands of unique natural resources	Fewer than 13 people per group and 15-29 encounters per day	Provide map that identifies infrastructure (trails, campgrounds, etc) Routine LE Presence Routes designated (trails, barriers, signs, etc)

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails All motorized use is limited to designated roads and trails Modify roads and trails as needed to mitigate impacts	Personal contacts Continue dispersal of area map Continue information of website

Rehabilitate non-designated roads and trails that area closed Continue facility maintenance (campgrounds, restrooms, etc.) Maintain signs and trail marking system Implement development and re-development of staging areas and campgrounds (Westside Staging, Eastside, Oakwood Springs, replace bathrooms, etc) Explore acquisition opportunities to accommodate and develop access from Highway 175 Explore inholding acquisition opportunities Close dead end trails that lead to private property encouraging trespass Annual evaluation of bridge structures (capacity and structural integrity	Update information at the kiosks in the staging and campground areas
Administrative and Monitoring Actions	
Administrative Actions: All motorized use is limited to designated and maintained dirt roads and trails Concentrated motorcycle use on loop trails Assess wet weather closure conditions Assess trail brushing and maintenance needs Consider dead end trails for other recreational opportunities (i.e. camping, hunting) Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Open for Equestrian Dogs must be on leash or controlled by voice command Hunting allowed in conformance with BLM and California Depart. of Fish and Game regulations Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire Restrictions	<u>Visual Resources Management</u> Class III <u>Partnerships</u> Mendocino 4x4 Club Santa Rosa 4x4 Club Los Altos Dirt Bikers Ridge Raiders (4x4 club) Sonoma County Sports Cycle Association Wine Country Rock Crawlers Mendocino County Sheriff's Department Lake County Sheriff's Department Westlake Resource Conservation District Local Native Plant Society Mendocino Resource Conservation District Native American Tribes Scotts Creek CRMP UC Hopland Field Station California Dept. of Forestry and Fire Protection

	Monitoring Actions: Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

South Cow SRMA - Last Valley/ Rickabaugh Gade (Zone 1)
Back Country

Management Objectives	By the year 2010, manage this zone to preserve and improve natural resource values while providing opportunities for visitors to engage in back country recreation, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Wildlife Viewing - Hiking - Nature Study - Hunting - Equestrian	- Enjoy Nature - Solitude - Education - Enjoy access to diverse Back Country	- Personal Exercise, skills in natural areas, improved outdoor knowledge - Environmental increased stewardship and protection of natural resources, greater protection of natural resources Educational Outreach

Setting Prescriptions

Physical	Social	Administrative
Primarily front country setting with islands of sensitive resources	Fewer than 3 people per group and 3 encounters per day	Identify on area brochure and map with signs and direction Identify as a non-motorized area Periodic LE presence

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails Assess needs of all acquired roads/trails	Develop an interpretive plan Identify on the area brochure/map

Implement wildlife habitat and/or cultural improvement projects Installation of interpretive kiosks for meadow areas Visually blend the well pump structure into natural landscape	
Administrative and Monitoring Actions	
Administrative Actions: All motorized use is limited to designated and maintained dirt roads/trails for access only Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to fires Not open to target shooting and/or paint ball Not open to Special Recreation Permit use No fees charged for general use Open to Equestrian use Dogs must be controlled (voice or leash) Hunting allowed in Lost Valley in compliance with BLM and California Depart. of Fish and Game regulations Explore acquisition opportunities for Rickabaugh Glade (private property) Lost Valley – Campfires must be in compliance with State of California Fire Restrictions	<u>Visual Resources Management</u> Class II Lost Valley Class III Eight Mile Valley <u>Partnerships</u> Local Native Plant Society Mendocino Resource Conservation District Native American Tribes Adjacent Private Landowners California Dept. of Forestry and Fire Protection **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Koxille SRMA - (Zone 2
Middle Country

Management Objectives	By the year 2015, manage this zone to provide recreation opportunities in a manner that promotes responsible use of designated trails and other facilities, and to reduce the sense of "lawlessness" and vandalism, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Hunting - Hiking - Mtn Biking - Wildlife Viewing - Camping	- Enjoy Nature - Solitude/Remoteness - Enjoy access to diverse Middle Country - Unique scenic opportunities	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, risk - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns Unique botanical opportunities

Setting Prescriptions

Physical	Social	Administrative
Middle country with non-motorized recreational opportunities and substantial private inholdings. There are unique natural and botanical resources.	Fewer than 5 people per group and 5 or less encounters per day Desirable solitude location	Designate routes Botanical Studies

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails Close dead end trails that lead to private property encouraging trespass Designate all motorized use, including administrative use only	Personal contacts Periodic LE Presence

Assess loop trail opportunities	
Administrative and Monitoring Actions	
Administrative Actions: All motorized use is limited to designated and maintained dirt roads and trails Assess loop trail opportunities Assess trail brushing and maintenance needs Consider dead end trails for other recreational opportunities (i.e. camping, hunting) Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Evaluate Special Recreation Use permit opportunities Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with BLM and California Depart. of Fish and Game regulations Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire Restrictions	<u>Visual Resources Management</u> Class II <u>Partnerships</u> Napa County Sheriff's Department Lake County Sheriff's Department Westlake Resource Conservation District Local Native Plant Society Homestake Mining Company UC Davis – McLaughlin Reserve Adjacent Private Landowners BRBNA – Blue Ridge Berryessa Natural Area California Dept of Forestry and Fire Protection California Dept of Fish and Game **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Koxille SRMA - (Zone)
Font Country

Management Objectives	By the year 2015, manage this zone to provide recreation opportunities in a manner that promotes responsible use of designated trails and other facilities, and to reduce the sense of "lawlessness" and vandalism, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Motorcycle - ATV Touring - 4x4 Touring - Camping - Hunting - Hiking - Mtn Biking - Shooting/ Paintball - Botany - Cultural	- Enjoy Nature - Solitude - Easy access to trails from campground - Enjoy access to diverse Middle Country - Technical, intermediate riding - Loop trail system (new experience for area)	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, risk - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns Unique botanical opportunities

Setting Prescriptions

Physical	Social	Administrative
Primarily front country with access to non-motorized middle country with multiple private inholdings Unique natural and botanical resources	Fewer than 5 people per group and 15-29 encounters per day Desirable party location for North Bay teenagers and local residents	Provide map that identifies infrastructure (trails, campgrounds, etc) Routine LE Presence Routes designated (trails, barriers, signs, etc) Botanical studies

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails	Personal contacts

All motorized use is limited to designated roads and trails Develop loop trail system Modify roads and trails as needed to mitigate impacts Rehabilitate non-designated roads and trails that area closed Continue facility maintenance (campgrounds, restrooms, etc.) Maintain signs and trail marking system Implement development and re-development of staging areas and campgrounds (Hunting Creek Campground, Northern trailhead, replace bathrooms, etc) Close dead end trails that lead to private property encouraging trespass Annual evaluation of bridge structures (capacity and structural integrity	LE Presence Continue dispersal of area map (BLM office and Lake Berryessa Visitor Center) Continue information of website Update information at the kiosks in the staging and campground areas Develop and install kiosks with area information (signs, map, etc.)
Administrative and Monitoring Actions	
Administrative Actions: All motorized use is limited to designated and maintained dirt roads and trails Concentrated use on loop trails Assess trail brushing and maintenance needs Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with BLM and California Depart. of Fish and Game regulations Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire Restrictions	<u>Visual Resources Management</u> Class III <u>Partnerships</u> Mendocino 4x4 Club Santa Rosa 4x4 Club Wine Country Rock Crawlers Napa County Sheriff's Department Lake County Sheriff's Department Westlake Resource Conservation District Local Native Plant Society Homestake Mining Company UC Davis – McLaughlin Reserve Native American Tribes Adjacent Private Landowners BRBNA – Blue Ridge Berryessa Natural Area BOR – Bureau of Reclamation California Dept of Forestry and Fire Protection California Dept of Fish and Game

	Monitoring Actions: Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Indian Valley SRMA - (Zone 2)
Middle Country

Management Objectives	By the year 2010, manage this zone to improve middle country recreational opportunities in collaboration with Yolo County Flood Control and Mendocino National Forest, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Motorcycle - ATV Touring - 4x4 Touring - Camping - Hunting - Hiking - Mtn Biking - Fishing - Shooting	- Enjoy Nature - Solitude - Education - Enjoy access to more remote sections of middle country - Enjoy easy access to multiple recreation opportunities -Challenge personal riding skills	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, risk - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns

Setting Prescriptions

Physical	Social	Administrative
Middle country with easy access to multiple recreational opportunities	Fewer than 12 people per group and 7-14 encounters per day	Provide map that identifies infrastructure (trails, campgrounds, etc) Routine LE Presence Routes designated (trails, barriers, signs, etc)

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails All motorized use is limited to designated roads and trails Identify and develop trails for non-motorized use Modify roads and trails as needed to mitigate impacts	Personal contacts Continue dispersal of area map at campgrounds (BLM and Yolo Cty) Continue information of website

Develop loop motorized loop trail system Rehabilitate non-designated roads and trails that area closed Continue facility maintenance (campgrounds, restrooms, etc.) Maintain signs and trail marking system Close dead end trails that lead to private property, Yolo County property and/or Fish and Game property encouraging trespass or conflict of use	
Administrative and Monitoring Actions	
Administrative Actions: All motorized use is limited to designated and maintained dirt roads and trails Concentrate motorized use to loop trails Assess trail brushing and maintenance needs Assess campground facility expansion to the west side of the Reservoir Consider dead end trails for other recreational opportunities (i.e. camping, hunting) Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with California Depart. of Fish and Game Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire Restrictions	<u>Visual Resources Management</u> Class II & III <u>Partnerships</u> Yolo County Flood Control (caretaker on site) Lake County Sheriff's Department Colusa County Sheriff's Department Westlake Resource Conservation District Local Native Plant Society Native American Tribes California Dept. Fish and Game California Dept of Forestry and Fire Protection **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Indian Valley SRMA - (Zone 1)
Front Country

Management Objectives	By the year 2010, manage this zone to maintain and improve front country recreational opportunities in collaboration with Yolo County Flood Control and Mendocino National Forest, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Motorcycle - ATV Touring - 4x4 Touring - Camping - Hunting - Hiking - Mtn Biking - Fishing - Shooting	- Enjoy Nature - Solitude - Education - Enjoy access to Middle & Back Country - Enjoy easy access to multiple recreation opportunities -Challenge personal riding skills	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, risk - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns

Setting Prescriptions

Physical	Social	Administrative
Front country with easy access to several pockets of middle country	Fewer than 25 people per group and 15-29 encounters per day	Provide map that identifies infrastructure (trails, campgrounds, etc) Routine LE Presence Routes designated (trails, barriers, signs, etc)

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails All motorized use is limited to designated roads and trails Modify roads and trails as needed to mitigate impacts Rehabilitate non-designated roads and trails that area closed Continue facility maintenance (campgrounds, restrooms, etc.)	Personal contacts Continue dispersal of area map Continue information of website Update information at the kiosks in the campground area

Maintain signs and trail marking system Close dead end trails that lead to private property, Yolo County property and/or Fish and Game property encouraging trespass or conflict of use	
Administrative and Monitoring Actions	
Administrative Actions: All motorized use is limited to designated and maintained dirt roads and trails Concentrate motorized use to loop trails Assess trail brushing and maintenance needs Assess campground facility expansion Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with California Depart. of Fish and Game Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire Restrictions	<u>Visual Resources Management</u> Class III <u>Partnerships</u> Yolo County Flood Control (caretaker on site) Lake County Sheriff's Department Colusa County Sheriff's Department Westlake Resource Conservation District Local Native Plant Society Native American Tribes California Dept. of Fish and Game California Dept of Forestry and Fire Protection Mendocino National Forest **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Cach Creek SRMA - (Zone 6)
Primitive Country

Management Objectives	By the year 2010, manage this zone to improve back country recreational opportunities in collaboration with Yolo County Flood Control and California Dept of Fish and Game, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Camping - Hunting - Hiking - Equestrian - Mtn Biking - Fishing - Non-motorized boating	- Enjoy Nature - Solitude/Remoteness - Education - Enjoy access to short or long distance recreation opportunities -Challenge personal skills	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, risk - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns

Setting Prescriptions

Physical	Social	Administrative
Primitive country surrounded by buffers of front and middle country	Fewer than 3 people per group and 3 encounters per day	Provide map that identifies infrastructure (trails, campgrounds, etc) Periodic LE Presence Routes designated (trails, barriers, signs, etc)

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails All motorized use is limited to administrative use Identify and develop loop trails for non-motorized use Maintain existing non-motorized trails Modify roads and trails as needed to mitigate impacts	Personal contacts Continue dispersal of area map at campgrounds and trailheads Continue information of website

Rehabilitate non-designated roads and trails that area closed Maintain signs and trail marking system	
Administrative and Monitoring Actions	
Administrative Actions: Vehicle use is limited to administrative use only Concentrate motorized use to loop trails Assess trail brushing and maintenance needs Assess campground facility expansion to the west side of the Reservoir Consider dead end trails for other recreational opportunities (i.e. camping, hunting) Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Evaluate for Special Recreation Permit opportunities Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with California Depart. of Fish and Game Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire Restrictions	<u>Visual Resources Management</u> Class I & II <u>Partnerships</u> Yolo County Parks & Recreation Yolo County Flood Control (caretaker on site) Lake County Sheriff's Department Westlake Resource Conservation District Local Native Plant Society Native American Tribes Adjacent private landowners California Dept. of Fish and Game Yolo County Roads Dept. California Dept of Forestry and Fire Protection BRBNA – Bleu Ridge Berryessa Natural Area Partnership **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Cach Creek SRMA - (Zone 5
Rural

Management Objectives	By the year 2010, collaborate with local residents to improve partnership development in the management of the area, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Hunting - Hiking - Equestrian - Mtn Biking	- Enjoy access to short or long distance recreation opportunities -Challenge personal skills	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, open space, stress reduction - Economic Increased local & regional tax revenue

Setting Prescriptions

Physical	Social	Administrative
Urban setting with subdivisions and ranchette type housing adjacent to front country and rural	Fewer than 50 people per group and Other people constantly in view	Staff conducting demonstrations Provide map that identifies infrastructure (trails, campgrounds, etc) in the BLM managed area Minimal LE Presence

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails Identify and develop non-motorized access points to the BLM lands Maintain signs and trail marking system on the BLM lands Roads are maintained by County or private landowner	Personal contacts Continue dispersal of area map

Administrative and Monitoring Actions	
Administrative Actions: The following pertains to the adjacent BLM lands or lands acquired within the classification: Vehicle use is limited to administrative use only Assess trail brushing and maintenance needs Consider dead end trails for other recreational opportunities (i.e. camping, hunting) Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Evaluate for Special Recreation Permit opportunities Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with California Depart. of Fish and Game Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire Restrictions	<u>Visual Resources Management</u> Class IV <u>Partnerships</u> Lake County Planning Department Lake County Parks and Recreation Lake County Sheriff's Department Westlake Resource Conservation District Local Native Plant Society Native American Tribes Adjacent private landowners Privately owned businesses California Dept. of Fish and Game California Dept of Forestry and Fire Protection BRBNA – Blue Ridge Berryessa Natural Area Partnership **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Cach Creek SRMA - (Zone 4
Urban

Management Objectives	By the year 2010, collaborate with local residents to improve partnership development and access opportunities in the management of the area, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Hunting - Hiking - Equestrian - Mtn Biking	- Enjoy access to short or long distance recreation opportunities -Challenge personal skills	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, open space, stress reduction - Economic Increased local & regional tax revenue

Setting Prescriptions

Physical	Social	Administrative
Urban setting with subdivisions and ranchette type housing adjacent to front country and rural	Fewer than 50 people per group and Other people constantly in view	Staff conducting demonstrations Provide map that identifies infrastructure (trails, campgrounds, etc) in the BLM managed area Minimal LE Presence

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails Identify and develop non-motorized access points to the BLM lands Maintain signs and trail marking system on the BLM lands Roads are maintained by County or private landowner	Personal contacts Continue dispersal of area map

Administrative and Monitoring Actions	
Administrative Actions: The following pertains to the adjacent BLM lands or lands acquired within the classification: Vehicle use is limited to administrative use only Assess trail brushing and maintenance needs Consider dead end trails for other recreational opportunities (i.e. camping, hunting) Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Evaluate for Special Recreation Permit opportunities Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with California Depart. of Fish and Game Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire Restrictions	Visual Resources Management Class IV Partnerships Lake County Planning Department Lake County Parks and Recreation Lake County Sheriff's Department Westlake Resource Conservation District Local Native Plant Society Native American Tribes Adjacent private landowners Privately owned businesses California Dept. of Fish and Game California Dept of Forestry and Fire Protection **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Cedar Roughs ERMA - (Zone 2)
Primitive Country

Management Objectives	By the year 2010, manage this zone to provide recreational opportunities for open space experience with unique botanical resources, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Hunting – northern end only - Hiking - Botany	- Enjoy Nature - Solitude - Education - Enjoy access to diverse Back Country - Scenic viewshed	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, risk, stress reduction - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns

Setting Prescriptions

Physical	Social	Administrative
Back country with unique botanical resources and Black Bear Habitat	Fewer than 3 people per group and 3 encounters per day	Minimal LE Presence Routes designated (trails, signs, etc) Provide map that identifies facilities (trails, parking etc.) and distributed at the Lake Berryessa Visitor's Center

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails Modify trails as needed to mitigate impacts Maintain signs and trail marking system Explore acquisition opportunities to accommodate and develop access from the Lake Berryessa Road	Personal contacts Identify infrastructure (trails, access points, etc) on area map Continue dispersal of area map Continue information of website

Close dead end trails that lead to private property encouraging trespass	
Administrative and Monitoring Actions	
Administrative Actions: Assess visitor use patterns Assess trail brushing and maintenance needs Consider dead end trails for other recreational opportunities (i.e. camping, hunting) Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Evaluate Special Recreation Use permit opportunities Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with BLM and California Depart. of Fish and Game regulations Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire Restrictions	<u>Visual Resources Management</u> Class II <u>Partnerships</u> Bureau of Reclamation –Lake Berryessa Office BRBNA- Blue Ridge Berryessa Natural Area California Dept of Fish and Game California Dept of Forestry and Fire Protection **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Cedar Roughs ERMA - (Zone 1)
Front Country

Management Objectives	By the year 2010, manage this zone to provide recreational opportunities for open space experience with unique botanical resources, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Hunting - Hiking - Botany - Mtn. biking - Hunting limited to north end - Equestrian	- Enjoy Nature - Solitude - Education - Enjoy access to diverse Back Country - Scenic viewshed	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, risk - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns

Setting Prescriptions

Physical	Social	Administrative
Front country with access to back country containing unique natural resources	Fewer than 25 people per group and 15-29 encounters per day	Periodic LE Presence Routes designated (trails, signs, etc) Provide map that identifies facilities (trails, parking etc.)

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails All motorized use is limited to designated roads and trails Modify trails as needed to mitigate impacts Maintain signs and trail marking system Explore acquisition or easement opportunities to accommodate	Personal contacts Identify infrastructure (trails, access points, etc) on area map Continue dispersal of area map Continue information of website Provide map and information at Lake Berryessa Visitor's Center

and develop access from the Lake Berryessa Road Close dead end trails that lead to private property encouraging trespass	
Administrative and Monitoring Actions	
Administrative Actions: All motorized use is limited to administrative use only Assess trail brushing and maintenance needs Consider dead end trails for other recreational opportunities (i.e. camping, hunting) Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Evaluate Special Recreation Use permit opportunities Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with BLM and California Depart. of Fish and Game regulations Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire Restrictions	<u>Visual Resources Management</u> Class III <u>Partnerships</u> Bureau of Reclamation –Lake Berryessa Office BRBNA - Blue Ridge Berryessa Natural Area California Dept of Fish and Game Adjacent Private Landowners California Dept of Forestry and Fire Protection **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Cache Creek SRMA - (Zone 3)
Back Country

Management Objectives	By the year 2010, manage this zone to improve back country recreational opportunities in collaboration with Yolo County Flood Control and California Dept of Fish and Game, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Camping - Hunting - Hiking - Equestrian - Mtn Biking - Fishing - Non-motorized boating	- Enjoy Nature - Solitude/Remoteness - Education - Enjoy access to short or long distance recreation opportunities -Challenge personal skills	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, risk - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns

Setting Prescriptions

Physical	Social	Administrative
Back country surrounded by buffers of front and middle country	Fewer than 6 people per group and 3-6 encounters per day	Provide map that identifies infrastructure (trails, campgrounds, etc) Periodic LE Presence Routes designated (trails, barriers, signs, etc)

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails All motorized use is limited to administrative use Identify and develop loop trails for non-motorized use Maintain existing non-motorized trails Modify roads and trails as needed to mitigate impacts	Personal contacts Continue dispersal of area map at campgrounds and trailheads Continue information of website

Rehabilitate non-designated roads and trails that area closed Maintain signs and trail marking system	
Administrative and Monitoring Actions	
Administrative Actions: Vehicle use is limited to administrative use only Concentrate motorized use to loop trails Assess trail brushing and maintenance needs Assess campground facility expansion to the west side of the Reservoir Consider dead end trails for other recreational opportunities (i.e. camping, hunting) Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Evaluate for Special Recreation Permit opportunities Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with California Depart. of Fish and Game Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire Restrictions	<u>Visual Resources Management</u> Class I & II <u>Partnerships</u> Yolo County Parks & Recreation Yolo County Flood Control (caretaker on site) Lake County Sheriff's Department Westlake Resource Conservation District Local Native Plant Society Native American Tribes Adjacent private landowners California Dept. of Fish and Game Yolo County Roads Dept. California Dept of Forestry and Fire Protection BRBNA – Bleu Ridge Berryessa Natural Area Partnership **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Cache Creek SRMA - (Zone 2
Middle Country

Management Objectives	By the year 2010, manage this zone to improve middle country recreational opportunities in collaboration with Yolo County Flood Control, Lake County Parks &Recreation, and Spring Valley Residents, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Motorcycle - ATV Touring - 4x4 Touring - Camping - Hunting - Hiking - Equestrian - Mtn Biking - Fishing - Non-motorized boating	- Enjoy Nature - Solitude - Education - Enjoy access to more remote sections of middle country - Enjoy easy access to multiple recreation opportunities -Challenge personal riding skills	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, risk - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns

Setting Prescriptions

Physical	Social	Administrative
Middle country with easy access to multiple recreational opportunities including the back country	Fewer than 12 people per group and 7-14 encounters per day	Provide map that identifies infrastructure (trails, campgrounds, etc) Routine LE Presence Routes designated (trails, barriers, signs, etc)

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails All motorized use is limited to designated roads and trails Develop loop motorized loop trail system	Personal contacts Continue dispersal of area map at campgrounds (BLM and Yolo Cty)

Identify and develop loop trails for non-motorized use (Payne Ranch Area) Maintain existing non-motorized trails Modify roads and trails as needed to mitigate impacts Rehabilitate non-designated roads and trails that area closed Continue facility maintenance (campgrounds, restrooms, etc.) Maintain signs and trail marking system	Continue information of website
Administrative and Monitoring Actions	
Administrative Actions: All motorized use is limited to designated and maintained dirt roads and trails Vehicle use is limited to administrative use only Concentrate motorized use to loop trails Assess trail brushing and maintenance needs Assess campground facility expansion to the west side of the Reservoir Consider dead end trails for other recreational opportunities (i.e. camping, hunting) Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with California Depart. of Fish and Game Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire Restrictions	<u>Visual Resources Management</u> Class II & III <u>Partnerships</u> Yolo County Parks & Recreation Yolo County Flood Control (caretaker on site) Lake County Sheriff's Department Colusa County Sheriff's Department Westlake Resource Conservation District Colusa Resource Conservation District Local Native Plant Society Native American Tribes California Dept. of Fish and Game California Dept of Forestry and Fire Protection BRBNA – Blue Ridge Berryessa Natural Area Partnership **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Cache Creek SRMA - (Zone 1)
Front Country

Management Objectives	By the year 2010, manage this zone to maintain and improve access to back and middle country recreational opportunities in collaboration with Yolo and Lake County Parks & Recreation, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- 4x4 Touring - Camping - Hunting - Hiking - Mtn Biking - Fishing - non-motorized boating	- Enjoy Nature - Education - Enjoy access to Middle & Back Country - Enjoy easy access to multiple recreation opportunities	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, risk - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns

Setting Prescriptions

Physical	Social	Administrative
Front country with easy access to middle and back country opportunities	Fewer than 25 people per group and 15-29 encounters per day	Provide map that identifies infrastructure (trails, campgrounds, etc) Routine LE Presence Routes designated (trails, barriers, signs, etc)

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails All motorized use is limited to designated roads and trails Maintain and modify roads and trails as needed to mitigate impacts if necessary	Personal contacts Continue dispersal of area map Continue information of website Update information at the kiosks in the trailheads and

Identify and develop trails for non-motorized use Rehabilitate non-designated roads and trails that area closed Continue facility maintenance (campgrounds, restrooms, etc.) Maintain signs and trail marking system Close dead end trails that lead to private property, Yolo County property and/or Fish and Game property encouraging trespass or conflict of use Develop day use parking facilities Develop equestrian parking facilities	campground areas (Yolo Cty)
Administrative and Monitoring Actions	
Administrative Actions: All motorized use is limited to designated and maintained dirt roads and trails Concentrate motorized use to loop trails Assess trail brushing and maintenance needs Assess campground facility expansion Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Evaluate Special Recreation Permit opportunities Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with California Depart. of Fish and Game Camping is limited to no more than 14 days per year and 14 days consecutively Campfires must be in compliance with State of California Fire Restrictions	<u>Visual Resources Management</u> Class IV <u>Partnerships</u> Yolo County Parks & Recreation Lake County Parks & Recreation Lake County Solid Waste Management Lake County Sheriff's Department Colusa County Sheriff's Department Yolo County Sheriff's Department Westlake Resource Conservation District Yolo Resource Conservation District Local Native Plant Society Native American Tribes BRBNA – Blue Ridge Berryessa Natural Area Partnership California Dept. of Fish and Game California Dept of Forestry and Fire Protection **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Stornetta SRMA - (Zone 3)
Back Country

Management Objectives	By the year 2015, manage this zone to improve and maintain Northern California coastal viewshed and recreational opportunities for the Garcia River and California Coastal Trail, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Fishing - Non-motorized Boating/ocean kayaking - Wildlife viewing	- Enjoy Nature - Education	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, stress reduction - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns Educational Outreach Scientific Research

Setting Prescriptions

Physical	Social	Administrative
Back country with access to the coast, Garcia River, and Manchester State Park	Fewer than 6 people per group and 3-6 encounters per day	Provide map that identifies infrastructure (trails, parking areas, etc) Minimal LE Presence Routes designated (trails, barriers, signs, etc)

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails To remain as open space with no development	Personal contacts Continue dispersal of area map Continue information of website Collaborate with CA Coastal National Monument Manager

Administrative and Monitoring Actions	
Administrative Actions: Any trail use is limited to designated trails only Encourage use away from sensitive cultural & natural resources Evaluate Special Recreation Permit opportunities Dogs must be on leash No wood cutting No hunting No firearms of any kind (ie. target shooting and/or paintball) No camping No campfires No fireworks No mechanized vehicles No bow and arrow No removal of any living resources, prehistoric, and historic artifacts	<u>Visual Resources Management</u> Class II <u>Partnerships</u> Local Native Plant Society Coastal Conservancy California Dept. of Fish and Game Wildlife Conservation Board Native American Tribes Adjacent Private landowners Audubon Society California Dept. of Park and Recreation **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Stornetta SRMA - (Zone 2)
Middle Country

Management Objectives	By the year 2015, manage this zone to improve and maintain Northern California coastal viewshed and recreational opportunities for the Garcia River and California Coastal Trail, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Equestrian - Fishing - Hiking - Non-motorized Boating/ocean kayaking - Wildlife viewing	- Enjoy Nature - Education - Enjoy easy access to coast from parking area - Enjoy easy access to multiple recreation opportunities	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, stress reduction - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns Educational Outreach Scientific Research

Setting Prescriptions

Physical	Social	Administrative
Back country with access to the coast, Garcia River, and Manchester State Park	Fewer than 7-12 people per group and 7 -14 encounters per day	Provide map that identifies infrastructure (trails, parking areas, etc) Minimal LE Presence Routes designated (trails, barriers, signs, etc)

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails All motorized use is limited to designated roads Implement development and installation of parking area improvements.	Personal contacts Continue dispersal of area map Continue information of website Collaborate with CA Coastal National Monument Manager

Administrative and Monitoring Actions	
Administrative Actions: Any trail use is limited to designated trails only Encourage use away from sensitive cultural & natural resources Evaluate Special Recreation Permit opportunities Dogs must be on leash No wood cutting No hunting No firearms of any kind (ie. target shooting and/or paintball) No camping No campfires No fireworks No mechanized vehicles No bow and arrow No removal of any living resources, prehistoric, and historic artifacts	<u>Visual Resources Management</u> Class II <u>Partnerships</u> Local Native Plant Society Coastal Conservancy Coastal Trail Group California Dept. of Fish and Game Wildlife Conservation Board Native American Tribes Adjacent Private landowners Mendocino Lighthouse Keeper's Association Audubon Society California Dept. of Park and Recreation City of Point Arena **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Stornetta SRMA - (Zone 1)
Front Country

Management Objectives	By the year 2010, manage this zone to maintain and improve Northern California coastal viewshed and recreational opportunities, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Equestrian - Hiking - Fishing - Wildlife viewing - Surfing - Ocean Kay	- Enjoy Nature - Education - Enjoy access to diverse Back Country - Enjoy easy access to coast from parking area - Enjoy easy access to multiple recreation opportunities	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, stress reduction - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns Educational Outreach Scientific Research

Setting Prescriptions

Physical	Social	Administrative
Front country with access to adjacent to back country, the coast, and Garcia River	Fewer than 10 people per group and 15-29 encounters per day	Provide map that identifies infrastructure (trails, day use area, etc) Routine LE Presence Routes designated (trails, barriers, signs, etc)

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails All motorized use is limited to designated roads and trails Implement development and installation of parking areas and trail markers	Personal contacts Continue dispersal of area map Continue information of website

Administrative and Monitoring Actions	
Administrative Actions: All motorized use is limited to administrative use only Encourage use away from sensitive cultural & natural resources Not open to wood cutting Evaluate Special Recreation Permit opportunities Open for Equestrian Use Dogs must be controlled via voice or leash No hunting No firearms of any kind (ie. target shooting and/or paintball) No camping No campfires No fireworks No mechanized vehicles No bow and arrow No removal of any living resources prehistoric and historic artifacts	<u>Visual Resources Management</u> Class III <u>Partnerships</u> Local Native Plant Society Coastal Conservancy Coastal Trail group California Dept. of Fish and Game Wildlife Conservation Board Native American Tribes Adjacent Private landowners Grazing Leasee Friends of the Garcia Audubon Society Mendocino Lighthouse Keeper's Association City of Point Arena **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Scattered Tracts ERMA
Middle Country

Management Objectives	By the year 2010, manage this zone to improve and maintain recreational opportunities and facilities that support the back country experience, providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Wildlife Viewing - Hiking - Nature Study - Hunting - Mtn. biking - Shooting - Equestrian - Pleasure Driving	- Enjoy Nature - Short or long distance recreational opportunities - Education - Enjoy possible access to diverse Back Country - Enjoy viewshed	- Personal Exercise, skills in natural areas, improved outdoor knowledge, stress reduction - Environmental increased stewardship and protection of natural resources, greater protection of natural resources

Setting Prescriptions

Physical	Social	Administrative
Valued open space surrounded by developed and populated rural areas	Fewer than 12 people per group and 29 encounters per day	Identify on area brochure and map with signs and direction Identify as a non-motorized area Periodic LE presence Collaborate with County tourism entities Personal contacts Continue dispersal of area map Continue information of website

Management and Marketing Actions	
Management Actions: Roads and Trails Assess needs of all acquired roads/trails Rehabilitate non-designated roads and trails that area closed Install and maintain signs and trail marking system Implement development and re-development of trailhead and access Close dead end trails that lead to private property encouraging trespass	**Marketing Actions:** Develop an interpretive plan Identify on the area brochure/map Collaborate with County tourism entities Promote volunteer efforts Personal contacts Continue dispersal of area map Continue information of website
Administrative and Monitoring Actions	
Administrative Actions: All motorized use is limited to administrative access only Assess trail brushing and maintenance needs Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Evaluate Special Recreation Use permit opportunities No fees charged for general use Equestrian Use limited to designated trails Dogs must be on leash or controlled by voice command Hunting allowed in conformance with BLM and California Dept. of Fish and Game regulations Camping is limited to no more than 14 days per year and 14 days consecutively	Visual Resources Management Class III Partnerships Adjacent private landowners County Parks and Recreation Depts. County Sheriff's Depts. Resource Conservation Districts Native American Tribes Local Native Plant Society Recreation organizations/clubs California Dept. of Forestry and Fire Protection

Campfires must be in compliance with State of California Fire restrictions	**Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

Black Forest ERMA - (Zone 1)
Front Country

Management Objectives	By the year 2010, manage this zone to provide seasonal recreation opportunities while maintaining the area's naturalness providing no less than 75% of responding visitors and affected community residents at least a "moderate" realization of these benefits (i.e., 3.0 on a probability scale where 1=not at all, 2=somewhat, 3=moderate, 4=total realization)

Outcomes

Primary Activities	Experiences	Benefits
- Photography - Hiking - Wildlife viewing	- Enjoy Nature - Solitude - Environmental Education - Viewshed - Limited Forest Ecosystem	- Personal Exercise, physically challenging, sense of adventure, sense of accomplishment/improvement, risk - Economic Increased local & regional tax revenue - Environmental Improved sense of importance for management concerns Unique botanical opportunities Education Outreach

Setting Prescriptions

Physical	Social	Administrative
Front country with multiple private inholdings Unique natural and botanical resources	Fewer than 15 people per group and 15-29 encounters per day	LE Presence Develop parking area, visitor kiosk (signs, etc.), and designate non-motorized route

Management and Marketing Actions

Management Actions:	**Marketing Actions:**
Roads and Trails Develop hiking loop trail system from Clear Lake to the top of Mount Konocti Modify trails as needed to mitigate impacts Rehabilitate non-designated roads and trails	Personal contacts LE Presence Create and provide a map of the area Continue information of website Disperse map and visitor information at the Clear Lake State Park

Maintain signs and trail marking system Close dead end trails that lead to private property encouraging trespass	
Administrative and Monitoring Actions	
Administrative Actions: All motorized use is limited for administrative use only Assess trail brushing and maintenance needs Close non-designated roads/trails Encourage use away from sensitive cultural & natural resources Not open to wood cutting Not open to target shooting and/or paint ball Evaluate user fee implementation – where providing services and/or facilities and collected funds reinvested Dogs must be on leash or controlled by voice command	<u>Visual Resources Management</u> Class II <u>Partnerships</u> Local Native Plant Society Native American Tribes Adjacent Private Landowners Lake County Parks and Recreation California State Park- Clear Lake State Park California Dept of Forestry and Fire Protection **Monitoring Actions:** Assure objectives are being met and setting prescriptions are being maintained Monitor implemented actions and evaluate

APPENDIX N

SPECIAL RECREATION PERMITS FOR EVENTS

APPENDIX N

N.1 SPECIAL RECREATION PERMITS FOR EVENTS

N.1.1 PERMIT INFORMATION

- Layout of total event logistics/infrastructure
- Pre-Event Meeting with applicant and BLM
- Post-Event Meeting with applicant and BLM
- Minimum of 6 hours daylight remaining before launching final race/event
- All applicants and involved parties will comply with BLM rules and regs (Including fire restrictions, resource damage, safety)
- Permits must be submitted to BLM Ukiah FO 180 - 120 days prior to event including application package, which includes:
    - Application
    - Associated Fees
    - Maps with designated routes identified
    - Operations Plan
    - Insurance
    - Vendors (Application including Business License & required permits)

- 7 steps in application processing:
    1. Preliminary Review
    2. Initial internal scoping
    3. External scoping
    4. NEPA Documentation
    5. External Review
    6. Decision Record
    7. Issue Permit

- Within 30 days of receiving application package, BLM shall notify applicant:
    - Any special requirements
    - Cost Recovery issues
    - Identify deficiencies in operating plan and/or application
    - Pre-event field tour scheduled with applicant and BLM staff member

- Modifications to plan, if needed

- Special Recreation Permit Fees

  Current fees, which are subject to change, are as follows:

  - $0.00 Non-Refundable Processing Fee
  - $60.00 Exclusive/Sole Use Fee
  - $60.00 Assigned Site Fee (commercial use only)
  - 3% Gross Revenue (commercial use only)
  - 3% Gross Receipts (competitive use only)
  - OR
  - $ Per participant user day (competitive use only)
  - Vendor Fees $0 and 3% of Gross Receipts

N.1.2 GENERAL

N.1.2.1 Command Center/Base

- Medical Staff
- Communications (Radio)
- Permittee to be stationed here
- Map (Comprehensive with Radio Dead Zones Noted)
- Pre-event radio/communication meeting for all field staff
- List of radio call signs for BLM staff & all involved participants (Club members) and should notify CDF/Howard Forest of these
- Cell phone number list (at all checkpoints and command center)
- List of all vendors and proof of compliance with State of California Health and Safety Laws and Regulations (licenses, etc.)

N.1.2.2 First Aid/Emergency Response

- Ambulance at several locations of the event area (Example: East, West, and or Staging Area/s of Cow Mountain)
- Route maps available at all checkpoints
- Sufficient number of EMT sweeps (2 teams of 2 minimum)
- Check with Counties for support
- Coordinate radio frequencies with EMT's

- Check availability of county dispatchers
- All Landing Zones (LZs) need to be GPS'd
- Notify CHP, local fire departments and hospitals (Lake/Mendocino Counties)

N.1.2.3 Sanitation

- Trash (Dumpsters)
- Comply with State of California Health and Safety Laws and Regulations for the number toilets/person for the length of the event including hand washing stations.

N.1.2.4 Staffing Needs (Minimum for closure of area)

- Incident Command Center (BLM and permittee)
- 3 Roaming LEO'S (BLM)
- 2 BLM Employees at Westside staging area (1 should be LEO)
- Any vehicles operating in official capacity need to be CLEARLYmarked

N.1.2.5 Post Event

- Clean-up strategy
- Equipment removal, trail rehabilitation, etc.
- Meeting with BLM/Applicant within 30 days following event (all fees are due at this time and post-use report must be submitted at this time)

N.1.2.6 Specific to Vehicle Events

- Spectators need to have releases of liabilities signed
- Stricter control of spectators
- Designated spectator areas with buffer zones identified
- Clarification of sound regulations available at sound check station/event flyer
- Roadway markings (No Parking, etc.)
- Programmatic EA
- All participants must pass sound level check and posses proper licensing
- Schedule of event times (starting and stopping)
- Sound meters (4 people per meter with 1 being a LEO)

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APPENDIX O

VISITOR FEE INFORMATION

APPENDIX O

O.1 VISITOR FEE INFORMATION

O.1.1 Federal Lands Recreation Enhancement Act (FLREA)

The Federal Lands Recreation Enhancement Act was enacted as part of the 2005 Omnibus Appropriations bill, which President Bush signed into law on December 8, 2004. The Act authorizes the Secretaries of the Interior and Agriculture for the next 10 years to establish, modify, charge and collect recreation fees at certain Federal recreation lands as provided for in the bill. It applies to the Bureau of Land Management, the National Park Service, the U.S. Fish and Wildlife Service, the Bureau of Reclamation, and the Forest Service.

The Act requires that a majority of the collected fees be reinvested at the site of collection to enhance visitor services and reduce the backlog of maintenance needs for recreation facilities. Authorized reinvestments include trail maintenance, toilet facilities, boat ramps, hunting blinds, interpretive signs, and programs.

BLM recreation fee sites in existence prior to the signing of the Act will continue as fee sites. However, the Act specifically prohibits charging fees under certain circumstances, including charging fees for parking, picnicking, overlooks, general access, and dispersed areas with low or no investment. Additionally the Act prohibits charging fees for individuals under 16 years of age.

A new "America the Beautiful – National Parks and Federal Recreation Lands Pass" will be established to cover entrance fees and standard amenity recreation fees for all Federal recreation lands where a fee is charged. The multi-agency fee program is intended to reduce confusion over differing fee programs and passes. Existing National Park passes, Golden Eagle, Golden Age, and Golden Access passes will continue to be valid until they expire.

There are opportunities for public involvement in determining new recreation fee sites and fee schedules, such as the Resource Advisory Councils (RACs) and the Recreation Resource Advisory Committees (RRACs), the latter to be established in 2005. Advance notice of a new fee area will be made in the Federal Register at least six months prior to establishment of the fee. Notice of a new fee or a change to an existing fee will be made in local newspapers and publications located near the site where a new fee would be established or changed.

Bureau of Land Management
Northwest California Resource Advisory Council

Recommendation on Recreation User Fees

Developed by the Recreation User Fee Subcommittee:	Dec. 7, 2001
Reviewed by the full RAC:	Jan. 31, 2002
Approved by the full RAC:	Jan. 31, 2002
Forwarded to the BLM:	Feb. 7, 2002

O.1.2 Preamble

Many people enjoy primitive recreation experiences and the solitude provided by pristine, wide open spaces. One of the attractions that draws people to northwestern California and BLM managed lands is the remoteness of the region. Therefore, the Northwest Resource Advisory Council propose that these areas be maintained as remote back country recreation areas with few improvements. Efforts should be made to preserve the wild aspects of a large segment of these areas with improvement emphasized only at those sites already developed and/or heavily utilized.

O.1.3 Guiding Principles for Setting or Increasing Recreation User Fees on BLM-managed Lands

- The purpose of collecting recreation-based user fees should be tied to: a.) BLM's mandate to sustain the health of the land and water resources while providing quality outdoor recreation services, and, b.) the need to improve access, services and/or facilities that affect a user's experience on public lands.
- Fees collected should not be offset by budget reductions, after the Congressionally mandated pilot project is complete.
- Fees collected should be used as a "reward." BLM employees should not be penalized for successful fee collection by having their regular budgets reduced by the amount of extra revenue generated through fee collection.
- Fee revenue should be spent on the site/area where it was collected rather than being put back into the agency's general operating budget or into the Nation's general fund, even after the pilot project is complete
- People already pay taxes, which should be enough to guarantee them access to their public lands. However, the Council sees the potential benefit of charging reasonable fees to allow BLM to improve access, services and facilities that affect a user's experience on the public lands.
- Fees should be spent first on improving operations and user experiences with existing facilities and programs before being used to fund expansion or further development.
- Users should be informed about how fees are being spent at each site or area. BLM should use the most appropriate mix of communication tools to convey messages for each site.
- Where not mandated by regulation, fee amounts should be set locally by the BLM manager and his or her staff, in consultation with the RAC, not by the national or state BLM offices.

- Fee amounts should be tied to meeting BLM's land management objectives and guiding principles, rather than simply being set at amounts that the markets will bear.
- Fees should not be used to limit use or determine carrying capacity at any given site or area. Such issues should be addressed through other methods such as reservation systems, lotteries, etc.
- BLM should establish non-fee entry opportunities, such as fee waivers, group discounts, in-kind trades for work, etc.

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APPENDIX P

BLM RECREATION PERMIT ADMINISTRATION HANDBOOK 2930-1

APPENDIX P

P.1 BLM RECREATION PERMIT ADMINISTRATION HANDBOOK 2930-1

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Form 1221-2
(June 1969)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MANUAL TRANSMITTAL SHEET

Release 2-292

Date 03/30/04

Subject 2930- RECREATION PERMIT ADMINISTRATION-POLICY AND PROGRAM DIRECTION FOR REVIEWING, ISSUING, ADMINISTERING, EVALUATING, MONITORING AND MANAGEMENT – (Public)

1. Explanation of Material Transmitted: This release transmits a revised Recreation Permit Administration Manual. This Manual revision provides detailed policy for reviewing, issuing, administering, evaluating and monitoring all types of recreation permits on lands and waters under the Bureau of Land Management administration

   This revised Manual provides overall policy direction to supplement the recreation permit regulations set forth in 43 CFR 2930 and the Recreation Permit Administration Handbook, H-2930-1

2. Reports required: None

3. Material superseded: None

4. Filing Information: File as directed below.

REMOVE	INSERT
None	2930 (total 6 sheets)

ACTING –
Assistant Director, Renewable Resources and Planning

2930 - RECREATION PERMIT ADMINISTRATION-POLICY AND PROGRAM DIRECTION FOR REVIEWING, ISSUING, ADMINISTERING, EVALUATING, MONITORING, AND MANAGEMENT- (Public)

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.02 OBJECTIVES
.03 AUTHORITY
.04 RESPONSIBILITY
.05 REFERENCES
.06 POLICY
.07 FILES AND RECORDS MAINTENANCE
.08 PROGRAM RELATIONSHIPS

2930 - RECREATION PERMIT ADMINISTRATION-POLICY AND PROGRAM DIRECTION FOR REVIEWING, ISSUING, ADMINISTERING, EVALUATING, MONITORING, AND MANAGEMENT- (Public)

.01 Purpose. This manual/policy statement and the user guide provides the Bureau of Land Management (BLM) policy, direction, and guidance for issuing and administering various recreation permits as a means of authorizing recreational uses of public lands and related waters.

.02 Objectives. The objectives of this guidance are to:

A. Standardize the administrative procedures for the issuance and management of the recreation program on a bureauwide basis and to be as consistent as possible with other Federal agency policies.

B. Provide more explicit direction to supplement the recreation permit regulations set forth in 43 Code of Federal Regulations 2930 (replaces 8370). The BLM policies are designed to:

1. Provide and maintain a wide diversity of recreation opportunities on the public lands.

2. Manage and monitor the natural, cultural, and scenic resources found on the public lands in a manner that assures the protection of sensitive resources and the continued availability of quality outdoor recreation opportunities and experiences.

3. Maintain recreation facilities to a standard that protects the resource, the public, and the public investment, and fosters pride of public ownership.

4. Provide for appropriate recreation facilities, balancing public demand, protection of public land resources, and fiscal responsibility.

5. Plan for all outdoor recreation activities through the Bureau planning system. The BLM recreation planning efforts will assure public awareness and encourage public participation, and the BLM will assist and cooperate in Federal, State, local, and private planning efforts.

6. Recognize that recreation use may have to be allocated or limited. Use limits or allocations will be established through the Bureau planning system.

2930 - RECREATION PERMIT ADMINISTRATION-POLICY AND PROGRAM DIRECTION FOR REVIEWING, ISSUING, ADMINISTERING, EVALUATING, MONITORING, AND MANAGEMENT- (Public)

7. Issue recreation permits in an equitable manner for specific recreational uses of the public lands and related waters as a means to manage visitor use, protect recreation resources, provide for the health and safety of visitors, and provide for private and commercial recreation use.

8. Assure that recreational users assume an appropriate share of the cost of maintaining recreation facilities and protecting the resources, by establishing and assessing equitable fees at appropriate facilities and for certain uses of the public lands.

2930 - RECREATION PERMIT ADMINISTRATION-POLICY AND PROGRAM DIRECTION FOR REVIEWING, ISSUING, ADMINISTERING, EVALUATING, MONITORING, AND MANAGEMENT- (Public)

.03 Authority.

A. Federal Land Policy and Management Act of 1976, as amended, Public Land Order 94-579 (43 United States Code 1701 et seq.)

B. Land and Water Conservation Fund Act of 1965, as amended, P.L. 88-578 (16 U.S.C. 460 (1-6a) et seq.)

C. Wilderness Act of 1964, P.L. 88-577 (16 U.S.C. 1131)

D. National Trails System Act of 1968, as amended, P.L. 90-543 (16 U.S.C. 1241, et seq.)

E. National Wild and Scenic Rivers Act of 1968, P.L. 90-542 (16 U.S.C. 1271-87, et seq.)

F. Alaska National Interest Lands Conservation Act of 1980, P.L. 96-487 (16 U.S.C. 3101, et seq.)

G. Oregon and California Grant Lands Act of 1937, P.L. 75-876 (43 U.S.C. 1181a, et seq.)

H. Sikes Act of 1974, P.L. 93-452 (16 U.S.C. 670, et seq.)

I. National Environmental Policy Act of 1969, P.L. 91-190 (42 U.S.C. 4321, et seq.)

J. Part 516, Departmental Manual, Chapter 6, Appendix 5 – Categorical Exclusion Review

K. Title 36 CFR, Subpart 71 – Recreation Fees

L. Title 43 CFR, Subpart 2930 – Special Recreation Permits, Other than on Developed Recreation Sites

M. Office of Management and Budget Circular A-25 of 1993 Revised

.04

2930 - RECREATION PERMIT ADMINISTRATION-POLICY AND PROGRAM DIRECTION FOR REVIEWING, ISSUING, ADMINISTERING, EVALUATING, MONITORING, AND MANAGEMENT- (Public)

.04 Responsibility.

A. The Deputy Director, through the Assistant Director, Renewable Resources and Planning, and the Recreation Group Manager, must:

1. Establish policy, goals, objectives, and procedures for managing recreation permits and fees on public lands and related waters within the framework of public law and Departmental policy.

2. Provide direction, management, and leadership relating to establishing fees and the issuance of recreation permits on public lands and related waters. Handles requests for any waivers or requests to deviate from established policy and procedures.

3. Identify, address, and reconcile interrelationships, policy issues, and conflicts between the recreation permit program and other related programs.

4. Maintain liaison with other Government agencies, permittees, user groups, and other organizations concerned with recreation permits on public lands and related waters.

B. State Directors must:

1. Implement policy and provide Statewide program coordination and guidance for managing recreation permits and fees on public lands and related waters.

2. Review, evaluate, and ensure accomplishment of approved Annual Work Plan items related to permits and fees, planning, allocation, and administration of permits.

3. Provide program development and technical assistance to Field Offices as required to ensure recreation permit administration is adequately accomplished.

4. Maintain liaison with other Government agencies, permittees, user groups, and other organizations concerned with recreation permits in the respective States.

2930 - RECREATION PERMIT ADMINISTRATION-POLICY AND PROGRAM DIRECTION FOR REVIEWING, ISSUING, ADMINISTERING, EVALUATING, MONITORING, AND MANAGEMENT- (Public)

C. Field Managers must:

1. Provide for the appropriate consideration of recreation permits within the Resource Management Planning (RMP) process.

2. Manage, monitor, evaluate, and ensure accomplishment of the approved Annual Work Plan items related to coordinating and guiding the recreation permit and fee program.

3. Ensure that individuals assigned to issuing recreation permits and collecting fees receive appropriate training.

4. Develop, implement, and monitor actions related to recreation permits.

5. Maintain liaison with other Government agencies, permittees, user groups, and other organizations concerned with recreation permit administration and related fees in the Field Office.

.05

2930 - RECREATION PERMIT ADMINISTRATION-POLICY AND PROGRAM DIRECTION FOR REVIEWING, ISSUING, ADMINISTERING, EVALUATING, MONITORING, AND MANAGEMENT- (Public)

.05 References.

A. BLM Manual 1601 – Bureau Planning System.

B. BLM Manual 1611 – Resource Management Planning Guidance.

C. BLM Manual 1619 – Activity Plan Coordination.

D. BLM Manual 1631 – Program Management.

E. BLM Manual 2920 – Leases, Permits, and Easements.

F. BLM Manual 8320 – Planning for Recreation Resources.

G. BLM Manual 8322 – Recreation Area Management Plan.

H. BLM Manual 8323 – Recreation Project Planning.

I. BLM Manual 9521 – Benefit Cost Analysis.

J. BLM Manual 9522 – Cost Effective Analysis.

K. The Limits of Acceptable Change, United States Department of Agriculture, Forest Service, General Technical Report INT – 176, 1985.

L. Part 516, Departmental Manual, Chapter 6, Appendix 5 – Categorical Exclusion Review.

M. Visitor Capacity on Public Lands and Waters, Making Better Decisions, The National Recreation and Park Association, 2002.

2930 - RECREATION PERMIT ADMINISTRATION-POLICY AND PROGRAM DIRECTION FOR REVIEWING, ISSUING, ADMINISTERING, EVALUATING, MONITORING, AND MANAGEMENT- (Public)

.06 GENERAL RECREATION PERMIT POLICY

A. Objectives of the BLM recreation permitting system are to satisfy recreational demand within allowable use levels in an equitable, safe, and enjoyable manner while minimizing adverse resource impacts and user conflicts. In issuing recreation permits to recreational users of public lands, the BLM authorizes permittees use of the lands and/or related waters for permitted purposes. This represents a privilege to use public lands and/or related waters which is subject to the terms and conditions of the permits.

B. Recreation permits are managed in a manner which is consistent with management objectives determined in resource management plans, recreation area management plans, or in their absence, through recreation management objectives resulting from analysis of resources and visitor use for each area.

Recreation permits are issued for specific recreational use of the public lands and related waters. They are issued as a means to manage visitor use, protect natural and cultural resources, and provide a mechanism to accommodate commercial recreational uses. Authorized by the Land and Water Conservation Fund Act (LWCFA), there are four types of uses for which these permits are required: commercial, competitive, organized groups/events, and individual or group use in special areas.

As use in a recreation area increases, one of the actions that may be taken by the authorized officer is to determine the desired level of use or the carrying capacity. When necessary, carrying capacities are set in accordance with decisions in the management plan for each area or, in the absence of management plans, through recreation management objectives resulting from analysis of resources and visitor use for each area.

If the use level in the area exceeds the carrying capacity, measures must be taken to remedy the problem. Indirect visitor and resource management techniques such as controlling public land access, interpretive efforts to promote environmental awareness and protection, providing extra protection for fragile resources, encouraging voluntary scheduling of commercial trips, or other mitigating measures to resolve user conflicts are considered before resorting to direct management methods such as allocating use among users or denial of the permit.

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When the need for more direct management methods is apparent, use opportunities are allotted and rationed among competing types of uses. This allocation consist of imposing limits on users who participate in similar types of recreation activities These limits may affect: (1) the overall number of individuals, (2) the number of groups or parties, (3) the number of individuals per group, and /or (4) the number of users by sector (e.g., commercial, competitive, or individual/group use).

The BLM's allocation goals are to maximize opportunities, experiences, and allowable uses within established objectives and to minimize resource impacts and user conflicts considering:

1. Manageability: allocation methods must be workable, implementable, defensible to users, and within legal and budgetary constraints.

2. Flexibility: the method used must be responsive to the relative amount of use and to demand shifts.

3. Fairness and Equity: to the greatest extent possible, for all concerned.

C. Paperwork Reduction

It is the policy of the BLM to:

Conform to the requirements of the Paperwork Reduction Act (44 U.S.C. 3501 et seq.) by disclosing to the public the estimated burden hours needed to comply with the information collection requirements of 43 CFR 4100, why the information is being collected, and what the information will be used for. This information is on each form required by the BLM to be filled out by the public.

D. Guiding Parameters

The BLM's Recreation 2000 Update of 1995 provides strategic direction regarding where the Bureau should focus its attention in recreation management. The following "guiding parameters" assist the BLM in keeping the outdoor recreation program focused in its efforts to provide quality recreation experiences for both present and future generations.

2930 - RECREATION PERMIT ADMINISTRATION-POLICY AND PROGRA M DIRECTION FOR REVIEWING, ISSUING, ADMINISTERING, EVALUATING, MONITORING, AND MANAGEMENT- (Public)

1. Achieving Sustainable Healthy Ecosystems:

Among other things, healthy ecosystems provide settings where present and future visitors have opportunities for high quality recreational experiences; local communities retain their cultural and economic health and integrity; and natural systems remain functional and healthy.

2. Resource-Dependent Recreation Niche:

The BLM will emphasize resource-dependent recreation opportunities and should customize the management of each local area according to its own unique attributes and situation. With this in mind, it may be necessary to respond to demands for facility development to protect resource values and public health and safety. Facility development may be required for staging areas for resource based use and not as visitor attractions in and of themselves. Each office must identify its niche within the framework of our national role.

3. Quality Outdoor Recreation Experiences:

Quality emphasis includes attaining universal accessibility in recreation sites, facilities and programs. Emphases will be on results, not process. The attempt is to empower Field Offices to match their niche as they define it and concentrate on providing quality recreation opportunities and experiences in that niche before moving on to other efforts.

.07 File and Records Maintenance.

Establish and maintain case files in accordance with BLM Manual Section 1274. See BLM Manual Section 1271 for case file disposition.

2930 - RECREATION PERMIT ADMINISTRATION-POLICY AND PROGRAM DIRECTION FOR REVIEWING, ISSUING, ADMINISTERING, EVALUATING, MONITORING, AND MANAGEMENT- (Public)

.08 Relationships to Other Planning Efforts.

A. Resource Management Planning. The administration and issuance of recreation permits for activities on public lands and related waters is an integral part of the resource management planning process. Allocation and use of public land and related waters resources as prescribed in the RMP must quantify, as determined necessary, specific carrying capacity and use allocation levels for resources related to recreation use. Determination of carrying capacities, allowable levels of use, allocation methodologies, and management objectives should be specified for a particular region, area, or resource within the RMP.

B. Recreation Activity Plans. Activity plans for recreation areas are completed as necessary to implement the decisions in the RMP. Specific recreation activity plans are subdivided into two levels as follows:

1. Recreation Area Management Plans. The recreation area management plan (RAMP) identifies the specific recreation management actions to be taken to implement the allocation decisions made in the RMP. RAMPs precede project plans and provide specific project parameters to guide the development of project plans.

2. Project Plans. Recreation project plans document proposed user requirements, profiles, and design parameters to ensure that final project designs meet specified recreation management objectives.

C. Multi-resource Activity Plans. One multi-resource activity plan for a management area is preferable to many individual resource activity plans for the same area. Incorporation of recreation permit concerns and related participation in multi-resource activity planning efforts is encouraged.

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D. Program Relationships. Most of the Bureau's resource programs are highly interdependent, and require coordinated resource management and efficient use of personnel. This requires managers and recreation program staff to initiate and pursue continued coordination with other resource programs, supporting program staffs, and other agencies involved in issuing recreation permits. Familiarity with these relationships and with other resource programs enables personnel assigned with recreation permit program responsibilities to help managers in understanding the ramifications of resource allocation and other management decisions in providing permitted opportunities on public lands and related waters. Similarly, activity planning efforts must ensure that recreation management goals as set forth in the RMP are not adversely affected by other program actions.

APPENDIX Q

SOIL IMPACT MITIGATION METHODS

APPENDIX Q

Q.1 SOIL IMPACT MITIGATION METHODS

The following are examples of practices, methods, and tools that may be employed for erosion mitigation:

- Waterbars
- Rolling dips
- Out sloping
- Rocked fossings
- Disconnect road from stream network
- Critical dip
- Rock-lined ditch
- Rip-rap
- Bio-Engineering
- Silt fences
- Detention basins
- Grade control structure
- Straw
- Straw roll
- Straw mat
- Straw bales
- Grass seed
- Native vegetation
- Jute netting

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APPENDIX R

MINERAL ACQUISITIONS

APPENDIX R

R.1 MINERAL ACQUISITIONS

R.1.1 Estate Retained by Private Party on Acquired Lands

The following acquired properties are located within the Cache Creek Natural Area

TOWNSHIP, RANGE, SECTION AND DESCRIPTION		ACREAGE
T. 13 N., R5 W. Sec. 03: Lot 4, SENE, SW¼NW¼, W½SW¼, SESW¼, W½NESE, SW¼SE¼. Sec. 02: W½SW¼. Sec. 22: NENW¼, S½NW¼, W½SW¼, NW¼SE¼. Sec. 31: Lots 2, 3, NESW¼, SESW¼, W½SE¼, SESE. Sec. 35: Portion of the SW¼	(Payne)	960.30
T. 13 N., R5 W. The whole of Fractional Section 4.	(Destanella)	198.00
T. 13 N., R6 W. Sec. 3: S½N½SENW¼, S½SENW¼	(Hoen)	12.59
T. 13 N., R6 W., Lying Southerly of Highway 20 Sec. 05: S½SW¼ Sec. 07: SENE, E½SE¼. Sec. 08: N½NW¼, SW¼, S½S½SW¼ Sec. 17: NW¼ Sec. 18: NENE.	(Pluth)	632.00
T. 14 N., R5 W. Sec. 28: Lots 3-6 inclusive, SW¼NE¼, SE¼SW¼, W½SE¼. Sec. 29: Lots 2-5 inclusive, SW¼SE¼. Sec. 32: Lots 2, 5-8, 11, 12, NENE, NESE. Sec. 33: All. Sec. 34: SW¼	(Leal)	1,476
T. 14 N., R5 W. Sec. 30: Lot 3, 4, W½NE¼, E½SW¼, N½SE¼, SW¼SE¼. Sec. 31: Lot 1, NW¼NE¼, NENW¼ T. 14 N., R6 W. Sec. 36: All	(Erwin)	948.72

The following acquired property is located within Cow Mountain Management Area

T. 14 N., R11 W.	(Norris)	427.00

Sec. 09: N½SW¼NE¼, N½SE¼.
Sec. 10: SW¼NE¼, S½S½NW¼SW¼

Total Subsurface Estate retained by private party on acquired lands is ±4,655 acres.

APPENDIX S

FIRE MANAGEMENT

APPENDIX S

S.1 FIRE MANAGEMENT

The information found in Tables S-1 and S-2 has been extracted from the National Fire Plan (2002). It describes the classification of current vegetative communities in relation to an historical perspective. Fire regimes have been classified into the five groups. Each group is structured in relation to its fire return interval and fire severity. In addition there are examples of the typical habitat for each.

Table S-1: Fire Regime Classifications

CLASSIFICATION	FIRE RETURN INTERVAL	SEVERITY	EXAMPLE HABITATS
Group I	0–35 years	Low	Ponderosa pine, other long-needle pine species, and dry site Douglas-fir
Group II	0–35 years	Stand replacement	Drier grasslands, tallgrass prairie, and some Pacific chaparral ecosystems
Group III	35–100+ years	Mixed	Interior dry site shrub communities, such as sagebrush and chaparral ecosystems
Group IV	35–100+ years	Stand replacement	Lodgepole pine and jack pine
Group V	>200 years	Stand replacement	Temperate rain forest, boreal forest, and high-elevation conifer species

A corollary descriptor of fuel conditions addresses a fire regime's degree of deviation from its historic conditions. These condition classes also measure general wildfire ecosystem risk.

Table S-2: Condition Class Descriptions

CONDITION CLASS	DESCRIPTION
1	Fire regimes in this condition class are mostly within historical ranges. Vegetation composition and structure are intact. The risk of losing key components of the ecosystem from fire is low.
2	Fire regimes in this condition class have been moderately altered from their historic range, either by increasing or decreasing the fire frequency. The risk of losing key components of the ecosystem from fire is moderate.
3	Fire regimes in this condition class have been significantly altered from their historical return intervals. Vegetation composition, structure, and diversity have been substantially modified. The risk of losing key components of the ecosystem from fire is high.

The Fire Management Staff at the BLM, Ukiah Field Office prepared the following wildfire information in 2004. Listed as Table S-3, is a tabulation that contains data existing in current BLM files and is listed by year for number of ignitions, largest fire in acres burned, average fire size in acres, and total acres burned by year.

Table S-3: Fire Acres by Year for 1980 – 2003, Ukiah Field Office

YEAR	NUMBER OF IGNITIONS	LARGEST FIRE (ACRES)	AVERAGE FIRE (ACRES)	TOTAL ACRES
1980	9	963	271.6	2,444
1981	8	25,534	8,456.9	67,655
1982	3	4,130	1,577.0	4,731
1983	3	1,200	657.0	1,971
1984	2	1,300	654.0	1,308
1985	6	2,100	431.6	2,590
1986	1	0	0.2	0
1987	3	750	536.7	1,610
1988	4	38,600	11,537.8	4,6151
1989	2	782	431.5	863
1990	0			
1991	2	5,370	2,750.0	5,500
1992	0			
1993	2	103	52.3	105
1994	0			
1995	2	2,540	1,281.5	2,563
1996	3	83,323	27,775.1	83,325
1997	3	310	111.0	333
1998	1	6,600	6,600	6,600
1999	7	40,000	6,229.9	43,610
2000	4	3,283	1,044.9	4,179
2001	1	150	150.0	150
2002	3	693	311.0	933
2003	6	1,465	348.2	2,089

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